I

ESCOLA UNIVERSITARIA POLITECNICA
DE VILANOVA I LA GELTRU

INTRODUCTION TO TECHNICAL ENGLISH I.

(Part 2)

Departament de Projectes de l'Enginyeria.
Secció d'Anglès.
Carmen Rueda

UPC

UNIVERSITAT POLITECNICA DE CATALUNYA

INTRODUCTION TO TECHNICAL ENGLISH I.

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CONTENTS:

UNIT 5.- COMPARISON AND CONTRAST.

UNIT 6.- IMPERSONALIZATION.

UNIT 7.- INSTRUCTIONS.

UNIT 8.- ANALYSIS OF THE TEXT.

Comparatives : 1 - 1

Superlatives : 1 - grup

mature : madur

lazy : gandul

suspicious : sospitós

polluted : contaminat

reflexive : reflexiu

24.3.95.

UNIT 5.

5. COMPARISON AND CONTRAST.

The functions we use in Technical Writing to relate the similarities and differences among things are known as comparison and contrast.

5.I. COMPARATIVES AND SUPERLATIVES OF ADJECTIVES.

5.I.1. *COMPARATIVES.*

COMP > (1)

a) 1 syllable adjectives ______ + **ER**

X is
taller
smaller
fatter
older
faster

b) 2 syllables final -y ______ + **ER**

X is
happier
crazier
lazier
(happy, crazy, lazy)

the rest ______ + **MORE**

X is **MORE**
truthful
absurd
boring

exceptions ______ + **ER** or **MORE**

X is
nobler or **more** noble
commoner or **more** common
politer or **more** polite
narrower or **more** narrow
cleverer or **more** clever
maturer or more mature

c) 3 syllables or more ______ + **MORE**

X is **MORE**
beautiful
suspicious
polluted
reflexive
interesting
intelligent

d) Irregular forms:

good ______ better
bad ______ worse
far ______ farther

THAN
me
I (am)

good	better	best
bad	worse	worst
far	farther further	farthest

further : addicional information
f.e. further information

old	older elder	oldest

elder : used only somebody (formal ocasions, literature).

much/many	more	most
little	less	least

COMP < (2)

X	is	**LESS**	tall, fat happy, crazy noble, common truthful, absurd interesting good, bad	**THAN** me I (am)

COMP = (3)

X	is	**AS**	tall, fat happy, crazy noble, common truthful, absurd interesting good, bad	**AS** me I (am)

(-) Negative:

X	is	**NOT** **AS** **SO**	tall, fat happy, crazy noble, common truthful, absurd interesting good, bad	**AS** me I (am)

5.I.2. *SUPERLATIVES*.

SUP ↗ (4)

a) 1 and 2 syllables.
Final -y. __________ + $\boxed{\textbf{EST}}$

X	is	**THE**	tall**est**, small**est** happi**est**, lazi**est** nobl**est**, clever**est** (*)

b) 2 syllables or more. ______ + $\boxed{\textbf{MOST}}$

X	is	**THE**	**most** boring most intelligent most noble (*)

c) Irregular forms:

X	is	**THE**	**best** (good) **worst** (bad) **farthest** (far)

of all

of the three

in town

in the world

(*) These adjectives make the superlative with either MOST or EST. The rule is the same as that for the comparatives.

This word means the same as that one

Jane is quite different from Mary

reliable: fiable
shiny: lluminoso
exhausted: exhaust

SUP↘ (5)

X	is	**THE LEAST**		
			tall, small happy, lazy noble, clever boring, rapid intelligent good, bad	of all. of the three. in town. in the world.

There are also some useful expressions to express comparison:

- -- **the same as**
- -- **different from** diferent de

31.3.95

EXERCISES:

1) Make the comparative and superlative form of these adjectives.

-low lower \ lowest
-early earlier \ earliest
-exhausted more exhausted \ most . . .
-crowded more crowded \ most . .
-strong stronger \ strongest
-successful more successful \ most . . .
-rich richer \ richest
-bad worse \ worst
-fine finer \ finest
-weak weaker \ weakest (dèbil)
-old-fashioned more old-fashioned \ most . . .
-stable more stable \ most . . . \ stabler \ stablest
-quick quicker \ quickest
-dry drier \ driest
-pure more . . . \ most . . . \ purer \ purest
-interesting more interesting \ most . . .
-shiny shinier \ shinest.

2) Write the correct comparative form to complete these sentences:

1.- She is (old) older than her brother.
2.- Use this machine. It is (reliable) more reliable than that one.
3.- Which is (cheap) cheaper a Mackintosh or a PC?
4.- This method is (fashionable) more fashionable than the one we used last year.
5.- This box is (heavy) heavier than I thought.
6.- The pressure of that gas is (high) higher than its volume.
7.- Tomorrow you should come (early) earlier than today or you'll miss the lecture. { classe universitat
conferència

to admit : admitted
to listen : listened
complicated \ complex
developed
calm ≃ quiet (millor calm en 3-6)
nervous
rather: preferiria

7 ⇒ I would rather
economical : barat relacionat amb l'economia
↳ economic section.
$\nleftrightarrow$

4)
1. isn't $\left|\begin{smallmatrix}\text{as}\\\text{so}\end{smallmatrix}\right|$ just as
3. is less light than \ isn't $\left|\begin{smallmatrix}\text{as}\\\text{so}\end{smallmatrix}\right|$ light as
5. aren't as easy as
6. less good \ isn't so good as

to master dominar
whale : balena

8.- The liquid in this tube is (red) redder than the other one.

3) Choose the comparative form of an adjective to complete these sentences:

1.- Speaking English is more interesting than writing English.
2.- Chemistry is as boring as Physics.
3.- Operating a computer is not so easy \ the same as operating a calculator.
4.- Spain is less interesting than England.
5.- Computer languages are more difficult than human languages.
6.- When I have to take an exam, I don't get as quiet as you do.
7.- I'd rather read a newspaper. It is not so boring as a magazine.
8.- A PC is less economical than a Mackintosh.
cheap

4) Rewrite these sentences. Use any comparative structure you may need (there are several posssible answers).

1.- A Ferrari is faster than a Renault.
A Renault is slower than \ less fast than
2.- An archaeological expedition in the Sahara Desert is more exciting than a holiday in Greece.
A holiday in Greece is more boring than \ isn't as exciting as \ is less exciting than
3.- A dolphin is not as heavy as a killer whale.
A killer whale is heavier than
4.- I don't want that piece of metal. This one is stronger.
This piece of metal less weak than \ isn't as weak as
5.- Low-level assembly languages are easier than machine languages.
Machine languages are more difficult than \ are less easy than
6.- COBOL is better for business than FORTRAN.
FORTRAN is worse than COBOL for business
7.- BASIC is more popular for education than FORTRAN.
FORTRAN isn't so popular as \ more unpopular than
8.- High-level programming languages are not as easy to master as assembly languages.
High-level programming languages aren't so easy as \ are more difficult ... than \ are less easy ... than

5) Complete with either a comparative or superlative form.

1.- His experiment was (good) the best in his class.
2.- Which country has (hot) the hottest summer?
3.- That big computer is (valuable) the most valuable thing in this school.

less

4.- Your friend is (intelligent) more | intelligent than you.

5.- This reaction is (fast) faster than that one.

6.- Prof. Brown was (careful) as careful with today's experiment as he was with yesterday's.

6) Look at the table about pocket calculators and make as many superlative sentences as you can. Make comparisons between the different calculators. Which one would you buy? Why?

Pocket calculators

	Price (in dollars)	Guarantee	Size (in cubic centimetres)	Facilities	Convenience of controls	How easy to read	Reliability	Weight
Oxford	12	1 year	540 cc	CM %	3	3	3	230g
Rapidman	7	6 months	200 cc	% √	3	3	3	290g
Florida	45	2 years	180 cc	CM % √	5	5	4	95g
Super-mind	11	5 months	550 cc	% √	1	2	2	230g
Magnus	6	3 months	220 cc	%	2	2	1	125g

C = constant
M = Memory
√ = square root
% = per cent
1 = poor
5 = excellent

Magnus is the cheapest of all, and is the least realiability of all.

Florida is the most expensive of all, is the easiest to read, is not as heavier as Magnus.

Rapidman is heavier than the others.

Oxford is more expensive than Rapidman, and is the bigest of all.

chamber : cambra

PARALLEL INCREASE

COMPARATIVE	SUBJEC	VERB	COMP	SUB.	VERB
The colder	the weather	(is),	the higher	my heating bills	(are)
* The bigger	the house	(is),	the more expensive	(it [the house]	is)
▲ The more	you	work	the more money	you	get

weary : fatigat, cansat.

He likes me : jo li agrado
I like him : ell m'agrada

* Com el subjecte és el mateix a la primera part de la frase que la segona, es pot eliminar en la segona frase

▲ Quan el verb no és el TO BE no es poden eliminar, doncs la frase no s'entendria.

El TO BE en forma de temps no present sempre s'ha de posar.

7) 1. The later in the summer, the colder the weather | becomes
(is)

COMP + SUB + V , COMP + S + V
THE ______ , the ______

5.I.3. PARALLEL INCREASE.

There is also another kind of comparison for **PARALLEL INCREASE.** When two comparatives are used with "The" in this pattern, the verb TO BE is usually omitted:

Com més baixa   més gran

e.g. **The lower** the speed, **the greater** the density of smoke from oil burning in the combustion chamber.

7) Write sentences containing the following:
e.g. The higher one goes in the atmosphere, the colder the air becomes.

1.- The later you come ,
the colder the meal will be .
2.- The harder you work ,
the more weary you will be \ you get \ (you are) .
3.- The longer the trip \ journey ,
the less I like it .
4.- The more you learn english ,
The more you know .
5.- The more elastic the bed is ,
the more we'll make love .
6.- The hotter the weather is ,
the less clothes you wear .

8) Write sentences on that pattern by finishing the following correctly:
e.g. The deeper the hole, the narrower it became.

1.- The hotter the day, the more crowded it became .
2.- The higher the voltage, the lauder it became .
3.- The more developed the machine, the faster it became .
4.- The bigger the atom, the more concentrate it became .
5.- The further away the star, the shinier it became .
6.- The less you practise your English, the worse you'll do your exam .

1. Adverbs of manner say how something happens.

Compare : He's a slow worker \ He works slowly
The exam was easy \ I passed the exam easily
She's a beautiful singer \ She sings beautifully

2. We form most adverbs by adding -ly to the adjective

slow - slowly
unfortunate - unfortunately
good - well
fast - fast
hard - hard
early - early

★ adjective ending in -ly : friendly, lonely, lovely, silly, ugly

in a ________ way
She smiled in a friendly way

7.4.95

5.II. COMPARATIVES AND SUPERLATIVES OF ADVERBS.

5.II.1. *COMPARATIVES.*

COMP > (1)   exepció : early - earlier - earliest

X	works	**MORE** slowly carefully -- -- faster, **better** harder, **worse**	**THAN** me / I (do)

COMP < (2)

X	works	**LESS**	slowly carefully fast hard -- --	**THAN** me / I (do)

COMP = (3)

X	works	**AS**	slowly carefully -- --	**AS** me / I (do)

(-) Negation:

X doesn't work	**AS** **SO**	slowly carefully well badly fast hard -- --	**AS** me / I (do)

5.II.2. *SUPERLATIVES.*

SUP ↗ (4)

X	works	**THE MOST** slowly carefully -- -- **THE** fastest, hardest best, **worst**	of all. of the three. in town.

SUP ↘ (5)

X	works	**THE LEAST**	slowly carefully fast hard	of all. of the three. in town.

instances : cas
boundaries : limits
surroundings : entorn
stage : fase
to carry out = to perform = realitzar
to realize : adonar-se'n
actual - actually : real - realment

EXCEPTIONS:

Adjective	Adverb
good	well
bad	badly
fast	fast
hard	hard

EXERCISES:

1) Complete the following sentences with the adjectival or adverbial form of the adjective in brackets.

1.- It is necessary to define the limits of a segment of the physical universe (careful) carefully.
2.- A scientist must be a (careful) careful worker.
3.- In most (fortunate) fortunate instances, the boundaries which separate the system from its surroundings are (experimental) experimentally well defined.
4.- The project is in the (experimental) experimental stage.
5.- This was a (perfect) perfect solution to the problem.
6.- The problem was solved (perfect) perfectly.
7.- We should put the concentration of a saturated solution in a (separate) separate vessel.
8.- The two experiments should be carried out (separate) separatly.
9.- It was a very (clear) clear answer.
10.- The question was answered (clear) clearly.

2) Make the comparative and superlative form of these adverbs.

-quickly more \ most
-highly " "
-hard harder \ hardest
-strongly more \ most
-well better \ best
-carefully more \ most (anar sense compte)
-carelessly " "
-slowly " "
-badly worse \ worst
-repeatedly more \ most
-continually " "
-frequently " "

besides : a més a més
available : disponible
steel : ferro
mainframe : centrals
in addition : a mes
although : aunque
almost : casi
in fact : de fet

3) Complete these sentences with the right form of the adjective or adverb in brackets:

1.- In (fortunate) the most fortunate instances, the boundaries which separate the system from its surroundings are very well defined.
2.- A system is (important) the more important than the surroundings.
3.- This reaction takes place (quick) the more quickly than that one.
4.- Boundaries for some systems are (large) larger than for other systems.
5.- The pressure of that gas is (high) higher than its volume.
6.- The steel cylinder and piston are (expensive) the most expensive than parts of that experiment.
7.- Temperature is (good) the best in state function.
8.- Thermodynamic systems are (careful) the most carefully than constructed of them all.
9.- The steel cylinder and piston are (resistant) more resistant than the rubber balloon.
10.- Molecules are (big) bigger than atoms.
11.- (Small) the Smallest part of a substance is the molecule.
12.- This microscope focuses (clear) more clearly than that one.
13.- My personal computer works (slow) as slowly as yours.
14.- He works much (fast) faster than I do.
15.- John drives (careful) the most carefully of all my friends.

4) Fill in the blanks using the correct form of the word in brackets. Use any other words you may need to make the comparison. The first one has been done for you.

BASIC was designed to be (easy) easier and (versatile) more versatile than other more scientific languages. Basic was also designed as an interactive language, one which is much (communicative) more communicative than other types of programming languages. In addition, BASIC is much (complicated) less complicated than other programming languages, so people can usually learn it much (quickly) more quickly than other programming languages. As it is (easy) easier and (friendly) friendlier than other languages, BASIC is (frequently) the most frequantly used programming language among the general population. BASIC is also (popular) more popular than ever because microcomputers use it as their main language. Besides, BASIC is almost always available on mainframe systems, although it can be used (frequently) more frequently than the other languages available. In fact, BASIC is becoming (popular) more popular (than) every day, especially for personal and educational uses.

→ com no surt amb qe comparen
nos'ha de posar !

comptable : té unitats
incomptable : no té unitats
paraules que poden fer el plural o ho siguin són comptables
com people.

much more money ⇒ molt més diners (I)
many more books ⇒ molt més llibres (C)

much less money ⇒ molt menys diners (I)
much fewer books ⇒ molt menys llibres (C)

5.III. COMPARATIVES AND SUPERLATIVES OF COUNTABLE AND UNCOUNTABLE NOUNS.

5.III.1. COMPARATIVES.

COMP > (1)

I	have	**MORE**	money books	**THAN** him / he (does)

(*) I have **more than** him. (quan no s'especifica qe sempre es posa MONE)

COMP < (2)

He	has	**LESS** money **FEWER** books	**THAN** me / I (do)

(*) He has **less than** me.

COMP = (3)

(+) He has	**AS MUCH** money **AS MANY** books	**AS** me / I (do)

(*) He has **as much as** I (do).

(−) He doesn't have	**SO/AS MUCH** money **SO/AS MANY** books	**AS** me.

(*) He doesn't have **so/as much as** I (do).

COMP = (4)

(+) He has	**AS LITTLE** money **AS FEW** books	**AS** me / I (do)

(*) He has **as little as** I (do).

(−) He doesn't have	**SO/AS LITTLE** money **SO/AS FEW** books	**AS** me.

(*) He doesn't have **as little as** me.

ducts : conduites
crosstalk : interférences

5.III.2. SUPERLATIVES.

SUP ↗ (5)

I	have	**THE MOST**	money books	of all. of the three. in the world.

(*) I have **the most** of all.

SUP ↘ (6)

I	have	**THE LEAST** money **THE FEWEST** books	of all. of the five. in the world.

(*) I have **the least** of all.

little /	less /	the least.	UNCOUNT.
few /	fewer /	the fewest.	COUNTABLE.

EXERCISES:

1) An engineer has compared the advantages of optical fibre with conventional copper cable. Match the advantage with its effect(s).

	ADVANTAGE	EFFECT
d	1.- Higher capacity	a.- less frequent repeaters
c	2.- Lower material cost	b.- more security
e	3.- Smaller size	c.- cheaper to produce
a, f	4.- Higher quality of transmission	d.- more information
b	5.- Complete electricity isolation	e.- less space in ducts
		f.- less interference or crosstalk

2) Complete the sentences using **much more** / **much less** / **much fewer** / **many more**.

1.- Optical fibres carry much more information than conventional cables.
2.- many more telephone calls can be transmitted using optical fibre.
3.- much fewer data can be transmitted using conventional cable.

↓ PLURAL

average grade : nota mitja

seminars attended : classes a les que s'ha assistit, o
seminaris

4.- You hear much less crosstalk when using optical fibre.
5.- There is much more interference on copper cables.
6.- Optical fibres occupy much less space.
7.- You need much fever ducts or cable pipes with optical fibre.
8.- Conventional cable has much less capacity than optical fibre.
9.- Conventional cable will cost much more to produce in the future than optical fibre.
10.- You need much more equipment, such as repeaters, on a copper cable line.

3) Classify the following nouns as either Countable (C) or Uncountable (U).

1.- telephone call C
2.- repeater C
3.- information I
4.- data C
5.- duct C
6.- money I
7.- security I
8.- interference I
9.- crosstalk I
10.- space I
11.- capacity I
12.- equipment I

4) This text is a report concerning three candidates to a post as engineer in a firm. Fill in the blanks.

	Mr. K	Mr. R	Mr. W
Age	30	34	55
Intelligence quotient	130	90	60
Average grade	3.8	3	2
Seminars attended	12	6	1
Years of experience	10	8	28
Present salary	1,000 $	2,800 $	3,000 $

I wish to recommend Mr. K: not only is he the youngest and the most untelligent of the three, but he has also got the best academic record. It is true that he doesn't have as much expercence as Mr. W, who has worked in different firms for 28 years, but Mr. W is already too \ very old for the job (we prefer young engineers). In addition to this, Mr. W is the least intelligent intelligent of the three, has attended much fewer \ the fewest seminars, and has got the worst \ the lowest average grade. So I must discard Mr. W. Let's now talk about Mr. R: he has quite a good average grade, and he is almost the same age as Mr. K but he is much less intelligent: on the other hand, Mr. R hasn't attended as many seminars as Mr. K. I must conclude by adding that Mr. K's promotion is a matter of justice: he is the best candidate, but he earns the least salary.

Neither: no

5.IV. OTHER EXPRESSIONS TO INDICATE COMPARISON AND CONTRAST.

5.IV.1. COMPARISON.

a) Apart from the patterns already seen, there are also some expressions that indicate different degrees of comparison:

	–	
e.g. That machine is	**slightly**	more modern.
	somewhat	
	rather	
	much	
	considerably	
	+	

b) Other ways of expressing comparison:

- **-to be similar to** (semblant)
- **-to be (almost) like** (quasi igual a)
- **-to resemble** (assemblar-se)
- **-to be close to** (semblant)

e.g. That machine	is similar to	that other one.
	is almost like	
	resembles	
	is close to	

- **-Both... and...**
- **-Neither... nor...**
- **-In comparison with**
- **-Compared with**

e.g. Both the Carnot cycle and the standard cycle involve the processes of compression and expansion.
Neither the Carnot cycle nor the standard cycle can be reproduced with the actual equipment.
In comparison with /Compared with the standard cycle, the actual cycle is less efficient.

5.IV.2. CONTRAST.

a) Some expressions indicating contrast:

- **-to be different from**
- **-to be unlike**
- **-to be in contrast with**
- **-to be opposed to**

e.g. This method	is different from	the other one.
	is unlike	
	is in contrast with	
	is opposed to	

Although
Even thought | + clause (frase subordinada)

Although
Even though | she doesn't enjoy her job, she works hard.
SUB VERB

she doesn't ______ - - - though

Though: normalment al final de frase i s'usa d'una manera oral

In spite of
Despite | + NOUN /- ING (GERUND)

In spite of
Despite | the rain, we went out for a walk

In spite of
Despite | being late, they didn't hurry

Although is was raining, we went out for a walk
Although they were late, they, -

BUT : PERO
ALTHOUGH : MALGRAT QUE
NEVERTHELESS : NO OBSTANT, TOT I AIXI
HOWEVER \ ON THE OTHER HAND : NO OBSTANT
WHILE \ WHEREAS : MENTRES
DESPITE \ IN SPITE OF : MALGRAT QUE
EVEN THOUGH : ENCARA QUE

b) Some sentence connectors expressing contrast:

- **-but**
- **-although** malgrat que
- **-Nevertheless** tot i així
- **-However / On the other hand**
- **-while / whereas** mentres

a principi de frase i seguits d'una coma

- **-despite**
- **-in spite of**

} malgrat que

- **-even though** } encara que

e.g. The Carnot cycle assumes the use of a turbine while / whereas the standard cycle uses an expansion valve.
The standard cycle assumes no drop in pressure in the condenser and evaporator. However / on the other hand, in the actual cycle the pressure drops because of friction.
This computer is very versatile although / but very expensive.

because of : a causa de

drop : tirar

EXERCISES:

1) Now write two sentences about each of the following. Say, first, what two things they have in common (Both / Neither) and second, how they compare (e.g. which is faster, more economical, etc)

1 -Steam trains and electric trains.
2 -Gasoline and diesel engines in cars.
3 -Iron and stainless steel.
4 -Metals and plastics.
5 -Oxygen and hydrogen.

1. They both travel on railroads, although electric trains are much more faster than steam train.

2. Neither gasoline nor diesel engines help the enviroment, however they both move cars.

3. They both are strong metals, in spite of iron gets oxidated

4. They are both useful to build things, on the other hand metals are heavier than plastics.

5. They are both gas, even though together they form a liquid.

damaged: dañarse
floppy disks: disquet

2) Use different sentence connectors to express contrast to link these sentences.

e.g.-Diesel engines require no ignition system. They need a lot of maintenance.

"Diesel engines require no ignition system but they need a lot of maintenance."

-The world needs alternative sources of energy. They are expensive to develop.

The world needs alternative souces of energy, although they are expensive to develop.

-Frozen foods can be stored for long periods. They are not as salutary as fresh food.

Frozen foods can be stored for long periods but they aren't as salutary as fresh food.

-Floppy disks have many advantages. They can be damaged easily.

Floppy disks have many advantages despite they can be damaged easily.

-High-level languages have programmes that can be written more quickly and have fewer errors. They are more difficult to master.

— — — but — — —

-Electronic mail is cheaper than sending a fax. The receiver may not know he has a message until his computer is on. The receiver will get his fax just a few seconds after the other person has sent it.

electronic mail . . . , nevertheless the receiver — — —
is on while the receiver will — — sent it.

3) Now write a sentence to contrast each of the following using: ~~WHILE,~~ HOWEVER, ON THE OTHER HAND, EVEN THOUGH.

1-Hammer / screwdriver martell \ tornavis
2-Air-cooled engines / Water-cooled engines
3-Solids / Fluids
4-Gases / Liquids

1. While hammers are use to bang, screwdriver are use to screw

2. The CB Two Fifty has air-cooled engine. However, cars have water-cooled engines.

bron : nij

4) Fill in the blanks using one of the following:

1.- ______________ the conceptual difference between a regional and a domestic satellite is not great, the political difference is enormous.
[✓ a) Although] b) In spite of c) However

2.- Each INTELSAT satellite must have a beam accessible to one third of the globe. _______________, a circular beam could cover the whole of India.
a) While [✓ b) Nevertheless] c) Despite

3.- Domestic systems can be set up without difficulty, ________ regional systems have to serve many different requirements
a) in spite of b) on the other hand [✓ c) whereas]

4.- Domestic systems are much smaller ______________ the global system.
a) opposed to [✓ b) in comparison with] c) neither

5.- The ECS system has antennas that _________________ INTELSAT standard antennas.
[✓ a) are similar to] b) considerably c) even though

6.- Domestic systems are _________________ INTELSAT.
a) neither b) in comparison with [✓ c) different from]

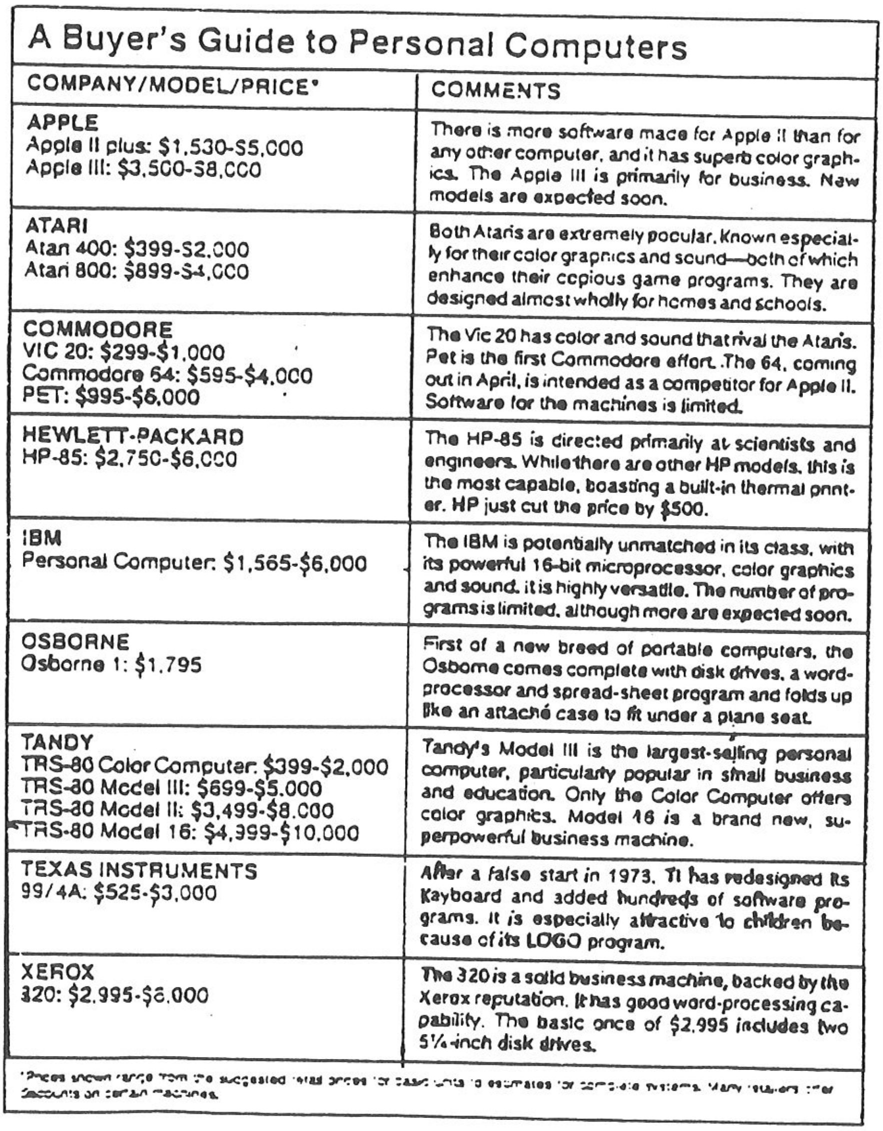
7.- It is difficult to make predictions about technological changes in the future. _______________, it is possible to get some idea of the changes which might occur.
[✓ a) However] b) Although c) While

8.- __________________ satellites have a high reliability, many earth stations are frequently affected by the weather and require more maintenance.
a) Despite [✓ b) Even though] c) Compared with

9.- _______________ its high reliability, the satellite stopped working for a week.
[✓ a) Despite] b) Even though c) While

10.- The first domestic satellite system was established in 1969, _________________ the first regional system did not develop until the mid 1970s.
a) on the other hand b) despite [✓ c) whereas]

5) Read this Buyer's Guide and choose your personal computer. Explain your choice in terms of the relative advantages and disadvantages of the different models, using as many expressions indicating comparison as you can. Refer mainly to the information supplied by the Guide. (10-15 lines).



A Buyer's Guide to Personal Computers

COMPANY/MODEL/PRICE*	COMMENTS
APPLE Apple II plus: $1,530-$5,000 Apple III: $3,500-$8,000	There is more software made for Apple II than for any other computer, and it has superb color graphics. The Apple III is primarily for business. New models are expected soon.
ATARI Atari 400: $399-$2,000 Atari 800: $899-$4,000	Both Ataris are extremely popular. Known especially for their color graphics and sound—both of which enhance their copious game programs. They are designed almost wholly for homes and schools.
COMMODORE VIC 20: $299-$1,000 Commodore 64: $595-$4,000 PET: $995-$6,000	The Vic 20 has color and sound that rival the Ataris. Pet is the first Commodore effort. The 64, coming out in April, is intended as a competitor for Apple II. Software for the machines is limited.
HEWLETT-PACKARD HP-85: $2,750-$6,000	The HP-85 is directed primarily at scientists and engineers. While there are other HP models, this is the most capable, boasting a built-in thermal printer. HP just cut the price by $500.
IBM Personal Computer: $1,565-$6,000	The IBM is potentially unmatched in its class, with its powerful 16-bit microprocessor, color graphics and sound. It is highly versatile. The number of programs is limited, although more are expected soon.
OSBORNE Osborne 1: $1,795	First of a new breed of portable computers, the Osborne comes complete with disk drives, a word-processor and spread-sheet program and folds up like an attaché case to fit under a plane seat.
TANDY TRS-80 Color Computer: $399-$2,000 TRS-80 Model III: $699-$5,000 TRS-80 Model II: $3,499-$8,000 TRS-80 Model 16: $4,999-$10,000	Tandy's Model III is the largest-selling personal computer, particularly popular in small business and education. Only the Color Computer offers color graphics. Model 16 is a brand new, superpowerful business machine.
TEXAS INSTRUMENTS 99/4A: $525-$3,000	After a false start in 1973, TI has redesigned its keyboard and added hundreds of software programs. It is especially attractive to children because of its LOGO program.
XEROX 320: $2,995-$6,000	The 320 is a solid business machine, backed by the Xerox reputation. It has good word-processing capability. The basic price of $2,995 includes two 5¼-inch disk drives.

*Prices shown range from the suggested retail prices for basic units to estimates for complete systems. Many retailers offer discounts on certain machines.

UNIT 6.

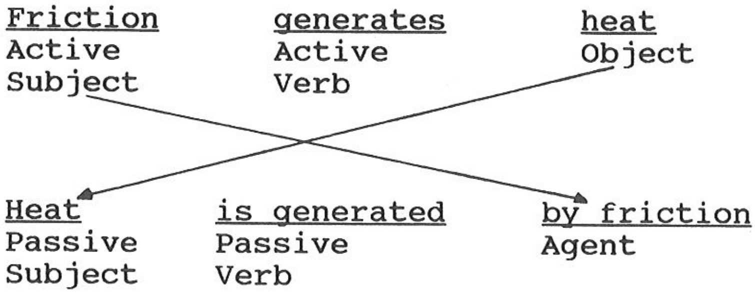
6. IMPERSONALIZATION.

Impersonal style in English is mainly achieved by means of the **passive voice.** The passive is often used in scientific writing because this form is more impersonal and objective. Technical writers tend to use it as a means to eliminate the subject from what is being described, since they are more interested in the technical object of study than in the doer of the action.

6.I **PASSIVE VERSUS ACTIVE FORM. Present.**

The reason for using either the passive or the active form has to do with emphasis. If a technical writer is interested in putting the **emphasis on THE SUBJECT**, he will use the **ACTIVE FORM.** But if he is interested in **THE OBJECT** of the action, he will have to use the **PASSIVE FORM.**

e.g.



Friction	generates	heat
Active Subject	Active Verb	Object
Heat	is generated	by friction
Passive Subject	Passive Verb	Agent

Whereas the grammatical subject in an active sentence is the one that carries out the action of the verb, in a **passive sentence** the grammatical subject is the **receiver of the action**, that is, the object of study.

Sometimes there is **no explicit subject or doer of the action** --or the writer does not want to mention it--, in these cases the common alternative is a **PASSIVE FORM.**

e.g. They receive the signal

(PV) The signal is received (by them)

e.g. That effect has already been mentioned in Chapter 4.

5.5.95 . NEVORDOSTOORI

They carry out an experiment ACTIVE
subj obj

An experiment is carried out (by them) PASSIVE
↑ quan cal

En general tenim : BE + PAST PARTICIPLE

They had carried out an experiment (A)

An experiment had been carried out (P)

They will have carried out an experiment

An experiment will have been carried out

They were carrying out an experiment

An experiment was being carried out

estava sent realitzat

They are carrying out an experiment

An experiment is being carried out

hardening : enduriment

lead : plom
ores : mines

In Technical descriptions the **present passive** is very common:

e.g. Water is cooled in the radiator of the engine.

Jet engines are used on modern aeroplanes.

The passive is formed with TO BE, followed by the past participle of the verb: e.g. to be used, to be developed, etc. If you want to specify the doer of the action or **agent**, you have to use **"BY"**.

e.g. The satellite receives the signal.

The signal is received by the satellite.
Agent

5.5.95

EXERCISES.

1) Rewrite these sentences using the passive form instead of the active.

1.- We rarely find pure metals in nature.
Pure metals are found rarely in nature

2.- We recover metallic ores from the earth in many ways.
Metallic ores from the earth are recovered in many ways.

3.- We obtain lead from a mineral which we call galena.
Lead is obtained from a . . .

4.- We use hardening to make metals harder.
Hardering is used to make metals harder

5.- Solids transmit sound very well.
Sound is transmited by solids very well

6.- The pressure of the air does not affect the speed of sound.
The speed of sound isn't affected by the presure of the air

7.- The sound of thunder nearly always follows the lightning flash.
The lightning flash is nearly always followed by the sound of thunder

8.- We usually describe it as air. (normalment ho descrivim com aire)
It is usually described as air

jet engines : motors a reació

whole # = $\mathbb{Z}$

$$\text{es pot posar}\left\{\begin{array}{l}\text{by} \rightarrow \text{agent}\\ \text{with} \rightarrow \text{instrument}\end{array}\right.$$

layer rock: cap roca

to stream = to flow = fluir

alight : encès

lid : tapa

tap : aixeta

well : pou

to trap : atrapar

pipe : canonada

to judg : jutjar

to rush : empenya amb violencia

to stream : fluir

to allow : permetre

9.- You need a lot of electrical energy to separate aluminium from the oxygen in aluminium ores.
A lot of electrical energy is needed to separate aluminium from the oxygen in aluminium ores

10.- You recycle plastics more easily than metals.
Plastics are more easily recycled than metals

2) Complete these sentences using the verb in brackets in active or passive form.

1.- (drive) Cars are driven by petrol engine.
2.- (cool) The Talbot car engine is cooled by air.
3.- (cause) Heat causes expansion.
4.- (generate) Heat is generated by friction.
5.- (power) Modern airplanes are powered by jet engines.
6.- (make) Sound waves make vibrations.
7.- (attract) Iron and steel are attracted by magnets.
8.- (form) Whole numbers are formed by a combination of digits from 0 to 9.
9.- (produce) The action of acid on zinc produces hydrogen.
10.- (cool) Some engines are cooled with air.

3) Read the text and cross out the wrong alternative.

OIL IN THE EARTH.

We cannot, of course, see the oil which ~~traps~~ / is trapped deep down in the ground. Men must study the rocks carefully. When they think that the rocks in a certain place may contain oil, a metal tower called a derrick ~~builds~~ / is built. A machine in the tower gradually cuts / ~~is cut~~ a narrow hole down into the ground. When the hole ~~makes~~ / is made, a steel pipe ~~pushes down~~ / is pushed down to stop the sides from falling in, and to keep water out. At last, if men have judged correctly, the hole reaches / ~~is reached~~ the oil. The oil usually rushes / ~~is rushed~~ up the pipe with great force, driven by the pressure of the gas at the top of the layer of rock, and it streams / ~~is streamed~~ high into the air. If this oil ~~catches~~ / is caught alight, then there will be a terrible fire. A kind of lid ~~fixes~~ / is fixed to the top of the pipe, and the oil ~~allows~~ / is allowed to flow out gently through taps. After a "well" has been used for a long time, it can be necessary to use a pump to get the oil out.

First, a small electric bell is taken and hung with its dry battery cell from a rubber band. The rubber is chosen because sound is easily transmitted. Next, the bell is hung inside a bell jar. Then, the bell jar is placed on a pumping table. As the air is pumped out, the sound of the bell becomes fainter and fainter. The movement of the hammer can be seen but no sound can be heard.

6.I.1 Sentence connectors marking the stages in a process.

The following sentence connectors are used to mark and link the different stages in a process. They are mainly used **to show how a process is gradually developed** into different stages.

There are different sentence connectors to express:

a) the opening or initial stage:
First, / ***Firstly,***

b) the following stages:
Then,
Next,
At this stage, (en aquesta fase)
Afterwards, (després, no confondre amb after)
Later, (més tard)

c) simultaneous actions:
mentres ***Meanwhile,*** / ***while*** /whereas
During this process, / ***when*** or ***as***

d) the last or ultimate stage:
Finally, final de qualsevol procés

e) an event which occurs after a long process:
Eventually, procés molt llarg i dificultós

4) Make the following passage more technical by making it impersonal, and underline those words expressing the different stages in the experiment.

First, I take a small electric bell and hang it with its dry battery cell from a rubber band. I choose rubber because it doesn't transmit sound easily. Next, I hang the bell inside a bell jar. Then, I place the bell-jar on a pumping table. As I pump the air out, the sound of the bell becomes fainter and fainter. You can see the movement of the hammer but you hear no sound.

cell : gàbia
pumping table : taula bombejadora
fainter : debilitar-se
hammer : martell.
to pump : bombejar

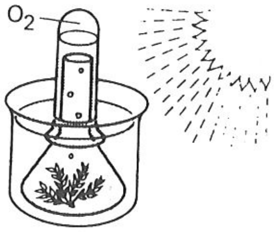
water plant : planta d'aigua
beater : got de precipitat
glass funnel : embut de vidre
the upper part : la part més alta
appears : és un verb intransitiu i no dur O.D
i no es pot fer passiva

to apply : aplicar, utilitzar

rise : pujar
Kettle : olla
stove : escalfador
steadily : fermament
to behave : obrar, conduir
steam : vapor
to rach : arribar a
to supply : proveir

5) Here are the steps in an experiment in the form of instructions. Write these intructions in **an impersonal way** and in the form of **a paragraph** using different **sentence connectors to mark the stages**. The picture may help you.

a) *Put the water plant in a beaker of water.*
b) *Put the beaker in the sunlight.*
c) *Place the glass funnel over the plant.*
d) *Put the test tube full of water over the funnel.*
e) *Leave the beaker in the sun for a few days.*
f) *Gas appears in the upper part of the test tube.*
(Use "produce")
g) *Test the gas. It is found to be oxygen.*



First, the water plant is put in a beaker of water. Next, the beaker is put in the sunlight. Later, the glass funnel is placed over the plant. Afterwords, the test tube full of water is put over the funnel. Then, the beaker is left in the sun for a few days. At this stage, gas is produced in the upper part of the test tube. Finally, the gas is tested. It's found to be oxygen.

6) Read the text and cross out the wrong alternative.

HEAT AND ITS EFFECTS.

One effect of applying heat to a substance is to produce a rise in temperature. A similar effect ~~is seeing~~ / is seen when a kettle of water ~~is placing~~ / is placed on the stove. Its temperature rises / ~~is risen~~ slowly and steadily until the water begins to boil. Once this occurs / ~~is occurred~~ the water cannot get hotter. Although heat is still being applied / ~~still applies~~, the temperature remains stationary. When water boils, it ~~is being changed~~ / is changed into steam. All liquids behave like this, and turn into gases when their boiling points ~~reach~~/ are reached. So when heat ~~is supplying~~ / is supplied to any liquid there is first of all a rise in temperature, and after that the liquid ~~is changing~~ / changes into a gas while the temperature ~~is remained~~ / remains steady . Heat has the property of changing a liquid into a gas. This change is generally known/ ~~knows~~ as evaporation.

to give off : desprendre

3: te dues possibilitats ⇒

They gave this substance the name radium
This substance was given the name radium

Un altre exemple: He gave a book to Joe (A)
A book was given to Joe (P)

He gave Joe a book (A)
Joe was given a book (P)

Sempre es passa a davant el primer sigui O.D o O.I

6.II THE PASSIVE FORM IN THE PAST

Jer informes

The passive form in the past tense is used when reporting.

1) WAS + Past Participle
WERE

e.g. Newton discovered the Binomial Theorem.
The Binomial Theorem was discovered by Newton.

2) We can use the Present Perfect to report on progress, that is, to talk about what has happened up to the present.

HAS BEEN + Past Participle
HAVE

e.g. They have tested new kinds of engine since 1982.
New kinds of engine have been tested since 1982.

e.g. Some engineers have already studied that problem.
That problem has already been studied.

3) HAD BEEN + Past Participle

e.g. Those scientists had tested the apparatus before they made the experiment.
The apparatus had been tested before the experiment was made.

EXERCISES.

1) Rewrite these sentences using the passive form instead of the active.

1.- Uranium gave off radiation.
Radiation was given off by uranium

2.- Madame Curie called it radio-activity.
It was called radio-activity by M. Curie

3.- They gave the name radium to this substance.
The name radium was given to this substance

4.- The other scientists did not believe them.
They weren't believed by the other scientists

jaune : soufre
Chlorène = Cl

5.- We have made great progress on the use of solar energy for heating purposes.
Great progress on the use of solar energy for heating purposes has been made

6.- They measured the cylinder yesterday.
The cylinder was measured yesterday

7.- Scientists have not developed large use of solar radiation yet.
Large use of solar radiation hasn't been developed yet

8.- They soon found the fault.
The fault was soon found

9.- We have used Chlorine in its various forms in disinfecting water.
Cl in its various forms has been used in disinfeting water

10.- The Romans had used bronze for weapons before others did.
Bronze for weapons had been used by the Romans before others did

11.- They considered all the other metals base metals.
All the other metals were considered base metals

12.- In America they have used solar radiation to heat homes on a small scale.
Solar radiation has been used to heat homes on a small scale
In America

2) Complete the following sentences by putting the verb in brackets into the correct tense, in active or passive form.

1.- (make) Medicine made great progress in the early fifties.
2.- (not yet discover) Man hasn't discovered a cure for the common cold yet.
3.- (already photograph) The whole area has already been photograph from the air.
4.- (just complete) The students have just completed the experiment.
5.- (break down) The generator broke down three times last week.
6.- (develop) Chemists have developed many synthetics during the last few years.
7.- (just publish) The examination results have just been published.
8.- (supply) The World Health Organization has supplied aid to many countries.

aid : ajud

dam : pressa

enough : davant nom
darrere adjectiu

12.5.95

3) Choose the correct form in the Passive Voice, either Simple Past or Present Perfect, for each verb in the following paragraphs.

The first calculating machine (build) was built *in 1642, but since that date, many improvements (make)* have been made*. Electro-magnetic computers (produce)* were prodeced *for the first time in America in 1889. They (use)* were used *generally until electronic computers (introduce)* were introduced *in the 1940s. Since then, more and more advanced computers (produce)* have been produced *for use in all fields.*

The face of the earth (shape) has been sphaped *by man as well as by nature. In the last fifty years, many great dams (build)* have been built *on the world's rivers and many lakes (form)* have been formed*, The Kariba Dam, which (complete)* was completed *in 1960, and the Volta Dam, which (finish)* was finished *in 1966, are the two biggest dams in Africa. Thanks to these dams, thousands of square miles of dry land (make)* have been made *fertile and enough electricity (generate)* has been generated *for new industries and millions of homes.*

4) Complete this text using the verb forms given below.

THE DEVELOPMENT OF WORLD COMMUNICATIONS.

During the last ten years world communications have developed *very rapidly. An obvious instance* has been *the sending of communication satellites into orbit. The large increase in the number of messages which* are sent *from one part of the world to another* has been called *the "communication explosion". For example, communication satellites* were used *to send television pictures of the Mexico Olympic games to countries as far away as Japan & Russia. However, this communication explosion* hasn't been restricted *to television. The postal services* have also expanded *; in Western Europe in 1968 nearly a hundred thousand million letters and parcels* were sent *by post.*

HAS BEEN
HAS BEEN CALLED
HAVE DEVELOPED
HAVE ALSO EXPANDED
HAS NOT BEEN RESTRICTED
WERE SENT
WERE USED
ARE SENT

pulp : pasta

3 = spinneret
threads : fils
procés :
reel : rodet
wound past wind : enrollar
plate : plat
a setting bath

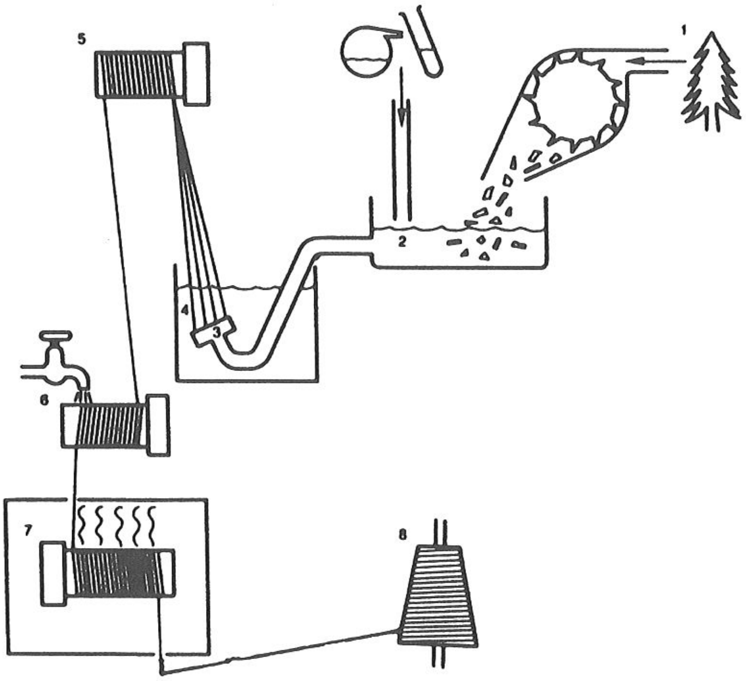
* tots dos són vàlids, però el passat lliga més amb el temps

5) Cross out the wrong alternative.

WHERE COULD WE BE WITHOUT SYNTHETIC MATERIALS?

Man-made fibres ~~were~~ / have been with us since 1905 when Courtaulds first produced / ~~has produced~~ rayon. Other materials ~~are made~~ / had been made before, but were of little practical use. Rayon ~~made~~ / was made by dissolving cellulose in a solution of sodium hydroxide, or caustic soda, as it * *is called / was called. The cellulose was obtained / ~~obtained~~ from shredded wood pulp. The dissolved cellulose was formed/ ~~has formed~~ into threads by forcing it through a spinneret (a metal plate with holes in it) in a setting bath of dilute sulphuric acid. The threads were drawn / ~~have drawn~~ from the setting bath, wound on a reel, washed, then dried on a heated roller and finally wound on to a bobbin.*

Rayon was not / ~~has not being~~ a truly synthetic fibre, but a reconstituted natural fibre --cellulose. Polyvinyl chloride (PVC) and nylon were the first truly synthetic materials. These ~~made~~ / are made by changing the molecular structure of coal or oil. The molecules join together, end to end, during a chemical reaction to form a long molecule called / ~~is called~~ a polymer. Nylon was first produced / ~~has been first produced~~ in 1934.



7. took
closed \ filled it
placed
opened
" " v. intransitiu no es pot fer passiva – fell
" " appear
supported
would use

6) Complete this text using the verbs listed below by putting them into the correct tense.

A SUPERCHIP

Researchers at Fujitsu Corporation have designed *a new high-performance integrated circuit that may* give *an important step towards future supercapacity computers. Its main advantage is speed: it* is *twenty times faster than conventional semiconductors. It also* produces *less heat.*

In the beginning, the prototype of the circuit could *produce only continuous current, but Fujitsu scientists finally* developed *a new element that can spark the electrical current only when an electronic signal* is operated *__________, and then they* integrated *the two devices on the same wafer.*

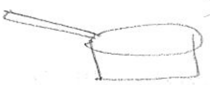
BE DESIGN GIVE OPERATE
CAN DEVELOP INTEGRATE PRODUCE

integrate : completar

7) This is the impersonal description of an experiment. Make it narrative. (Rewrite it in the Past tense, taking Torricelli as subject).

AN EXPERIMENT TO MEASURE ATMOSPHERIC PRESSURE.

First, a long glass tube is taken. The tube is closed at the top and then is completely filled with water. Next, it is placed vertically in a large barrel half-full of water. When the bottom of the tube is opened, the water level in the tube only falls to a height of approximately 10 meters above the water level in the barrel. As a result, a vacuum appears in the upper part of the tube. The water in the tube is supported by the atmospheric pressure. The height of the column of water can be used to measure atmospheric pressure.

8. was made
was inserted \ which had been filled —
frase intransitiu
was marked
(pan : )

was put
intransitiu \ idees
was emptied \ was left
was replaced \ was put back
en passive
intransitiu \ intransitiu \
és una frase amb un subj. massa
llarg i no ho fem \ en aquests casos no té O.D.

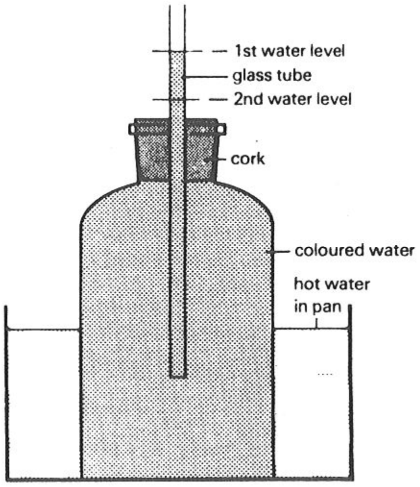
8) Make this text more technical and more impersonal by rewriting it in the passive voice.

EXPANSION OF LIQUIDS AND GASES.

O.D

First, we made a hole in a cork. Then, we inserted a narrow glass tube into the neck of the bottle which we had filled with coloured water. Afterwards, some of the coloured water rose in the tube. We marked the level of the coloured water in the tube. Next, we put the bottle into a pan of hot water. Almost immediately, the water level in the tube fell slightly, but then it started to rise until the water overflowed.

Next, we emptied the bottle and left a small amount of coloured water in the tube. We replaced the cork and we put the bottle back in the hot water. The water in the tube was immediately blown out at the top. This is because, when the air in the bottle became hot, its volume increased a lot and very quickly. This shows that the volume of a gas increases quickly when it gets hot.



cork : (tap de) suro

slightly : lleugerament

overflowed : vessar

to put back : tornar a posar

to blow out : sortir amb força
(blow \ blew \ blown)

to deal: tracker alignment issues

6.III THE PASSIVE FORM WITH OTHER TENSES AND VERBS.

.FUTURE TENSE

WILL BE + Past Participle

e.g. They will watch the planet all night through the telescope.
The planet will be watched all night through the telescope.

.MODAL VERBS

CAN
MUST
HAVE TO
MAY BE + Past Participle
COULD
MIGHT
SHOULD

e.g. The first men could use fire to make certain metals.
Fire could be used (by the first men) to make certain metals.

e.g. You should take great care when dealing with that substance.
Great care should be taken when dealing with that substance.

.CONDITIONAL TENSE

WOULD BE + Past Participle

e.g. They would carry out the experiment if they had all the necessary instruments.
The experiment would be carried out if they had all the necessary instruments.

number conversion charts: taules de conversió numèrica

case: nom ⇒ l'utilitzem com a subjecte.

EXERCISES.

1) Rewrite the following sentences with the passive form.

1.- You should check the mechanism of that machine before switching it on.
The mechanism of that machine should be checked before switching it on

2.- You can convert miles into kilometres by multiplying by 1.609.
Miles can be converted into kilometres by multiplying by 1609

3.- With Système International numbers, you should not use a comma to separate multiples of a thousand. You may use a space instead. → en lloc de / en el seu lloc
A comma shouldn't be used to separate . . .
A space may be used instead

4.- You must take care when using number conversion charts.
Care must be taken when . . .

5.- We have to compare digital data with analog data in order to understand the distinction between the two.
Digital data has to be compare with . . .

6.- Natural phenomena, such as lightning, wind or snow, may cause disturbances in the normal operation of electric power systems.
Disturbances in the normal . . . systems may be caused by natural phenomena, . . .

7.- He will fix the switch on the wall.
The switch will be fixed on the wall

8.- We must explain things in nature according to natural laws.
Things in nature must be explained according to . . .

9.- Radar instruments will always watch the sea.
The sea will always be watched by radar instruments

10.- They would send us the printer more quickly if they had a good post service.
We would be sent the printer . . .

11.- You can use radio telescopes to pick up signals from outer space.
Radio telescopes can be used . . .

9) to watch : vigilar

to contain : contenir
a weight hanging : una pesa penjada

to posses : poseer
to lift : aixecar
to waste : gastar
to store : guardar, estalviar
to releas : alliberar

---

speech : capaç de parlar
newest : més nou, el més nou
three-inch cube : un cub de 3 inch (mesura)
instead : en comptes
button : botó
portable : portable

---

deck : terra, capes
densety : densitat
almost : quasi
background : fondo
to convert : convertir
to eliminate : eliminar
to pack : empaquetar
to hook up : enganxar (?)
to employ : emplear

2) Cross out the wrong alternative.

The term "potential energy" ~~uses~~ / is used to refer to the energy which a body contains / ~~is contained~~ because of its position. For example, a weight hanging above the ground possesses / ~~is possessed by~~ potential energy. When a body ~~lifts~~ / is lifted, work ~~does~~ / is done. Some of this work ~~wastes~~ / is wasted, but some of it ~~can store~~ / can be stored inside the body as potential energy. When the body ~~releases~~/ is released, this stored energy ~~sets free~~ / is set free and some of it ~~can use~~ / can be used for doing work.

3) Cross out the wrong alternative.

TALKING TIME.

Now, thanks to electronic speech circuits, clocks can literally tell / ~~be told~~ the time. One of the newest "talking" clocks is the Vox Clock, a three-inch cube with no visual indicator at all. Instead, you push / ~~are pushed by~~ a button to hear / ~~be heard by~~ the time. This portable time piece ~~powers~~ / is powered by batteries and can ~~program~~ / be programmed to announce / ~~be announced~~ the time automatically every hour.

4) Complete this text with the verbs listed below.

COMPUTERIZED CASSETTE DECK.

Much of the music industry's studio recording equipment usually adapt *an advanced digital technology called Pulse Code Modulation. On PCM systems, a computer* converses *sound frequencies into "off" and "on" signals that can* be stored *densely onto a small amount of magnetic tape (in the same way as computer data* records *and* packs*). Now, JVC Ltd.* employes *this computerized recording technology for home use, in the form of cassette-style tape deck. According to JVC officials, this new tape recorder can* be hooked up *to existing hi-fi equipment, and it* eliminates *almost all electrical-interference background noise distortion.*

CONVERT	RECORD	ADAPT	HOOK UP
ELIMINATE	PACK	STORE	EMPLOY

to struck : colpejar

the failure of the pipe : el defecte del conducte

shiny : brillant

the ashes : les cendres

5) Rebuild these mixed-up sentences.

1 *-The water*	3 *can be transmitted*	4 *by lightning*
2 *-Turbines*	7 *was caused*	6 *by modern industry*
3 *-Electricity*	8 *have been discovered*	1 *by the plant*
4 *-The antenna*	1 *is being absorbed*	3 *by wires*
5 *-Some reactions*	2 *are driven*	7 *by corrosion*
6 *-Large amounts of fuel*	4 *was struck*	5 *by catalysts*
7 *-The failure of the pipe*	5 *can be accelerated*	2 *by steam*
8 *-New techniques*	6 *are used*	8 *by the Research Dpt.*

6) Put the following into **the Active Voice** (supplying suitable objects like "We" or "They" when necessary) or in **the Passive Voice.**

1.- Fire could be used to make certain metals by the first men.

The first men could used fire to make . . .

2.- Some little pieces of shiny, brown metal have been found among the ashes.

Some one has found some . . .

3.- Now the metal is called bronze.

Now, we call the metal bronze

4.- They didn't probably discover iron until very much later.

Iron wasn't probably discovered until — —

5.- The thin wire would be heated by a large current.

A large current would heat the thin wire

6.- Scientists have not answered the question about the earth's axis.

The question about . . . hasn't be answered by scientists

7.- At that time Aristotle's books were put into Arabic.

At that time, they put into Arabic Arist . . .

8.- The wall would reflect the radio signals.

The radio signals would be reflected by the wall

Bronzes :
purposes :
surpassed :
protective :
devices :
ensure :
injury :

9.- The transmitter will send out the signal.

The signal will be sent out by the transmitter

10.- The jet plane is now reflecting the waves.

The waves are now reflecting by the jet plane

11.- Some of it was taken to Europe.

They took some of it to Europe

12.- You can melt ice if you warm it, and you can condense steam on a cold surface.

Ice can be melt by you if you warm it, and steam can be condensed on a cold surface

13.- Newton invented a new branch of mathematics, known as Calculus.

A new branch of mathematics was invented

14.- Bronzes with varying tin contents were deliberately produced for different purposes.

They deliberately produced bronzes with varying tin contents for different purposes

15.- Everybody recognizes Sir Isaac Newton as one of the greatest scientists of all time and no one's work has ever surpassed his.

Sir Isaac Newton is recognised as one of the greatest scientists of all time and his work has never been surpassed.

16.- During that period his greatest discoveries were made.

He made his greatest discoveries during that period

17.- In the early days, when science began, Mathematics was studied in Europe.

In the early days, when science began, they studied Mathematics in Europe

18.- They said they would buy all the necessary instruments for the lab.

They said all the necessary instrument for the lab would be bought.

19.- You must instal protective devices on a power system to ensure continuity of electric service and to prevent injury to personnel.

Protective devices must be installed on a power system to ensure continuity of electric service and to prevent injury to personal.

En el verb to BE pot anar amb un adjectiu
però qualsevol altre verb no (cas 3)

Cas 5 => clearly no és clearlie dones
és un adverbi no un adjectiu.

band-pass filter:
attenuation:
modulation:

19.5.95

7) Rewrite the following sentences using the verbs related to the abstract nouns in the passive form as in the example.

e.g. The stimulation of that part was successful.

That part was successfully stimulated.

1.- The transmission of the signal was at a different frequency from yesterday's.

The signal was transmitted at a different ...

2.- There is an attenuation of those frequencies with a band-pass filter.

Those frequencies are attenuated with a band-pass ...

3.- The introduction of that technique was quick.

That technique was introduced quickly

4.- First we have the amplification of the voltage and then its modulation.

First the voltage is amplified and then it's modulated

5.- The expression of this theory can be clearer.

This theory can be expressed more clearly

6.- In thermionic diodes the emission of electrons is from the heated cathode...

In thermionic diodes electrons are emitted from ...

7.- ...then there is an attraction of these electrons by the anode.

Then these electrons are attracted by the anode

8.- The reproduction of the picture of a moving object can be at finite intervals.

The picture of a moving object can be reproduced at ....

statistics :

6.IV IMPERSONAL STATEMENTS WITH INTRODUCTORY "IT".

-- **1st pattern:** more informal

ex: We ***know that*** this material *is* the best in the market.
(style used in every day speaking and writing)

It ***is known that*** *this material is the best in the market. (informal, technical style)*

It	*is*	*known* *accepted* *assumed* *said*	*that....*
	can be *must be*	*seen* *demonstrated* *proved* *noticed*	

EXERCISES.

1) Change these statements into the pattern shown above.

1.- We know that ferromagnetism is a consequence of electron spin.
It's known that . .

2.- I can easily demonstrate that a=1.
It can be easily demonstrated that a=1

3.- We have assumed that these statistics are correct.
It has been assumed that . . –

4.- You can notice that the temperature falls at night.
It can be noticed that . . .

5.- We cannot prove that there is life after death.
It can't be proved that . .

6.- You can see that the image is out of focus.
It can be seen that

7.- Everybody knows that energy cannot be destroyed.
It's known that . . .

8.- Before Galilei, people did not accept that the Earth revolves around the Sun.
Before Galilei, It wasn't accepted that . . .

9.- We must prove that our method is correct.
It must be proved that - - -

10.- You must demonstrate that the formula you used is right.
It must be demonstrated that . . .

-- 2nd pattern: more formal and technical.

ex. We ***know that*** this material ***is*** the best in the market.
(In every day speaking or writing)

This material ***is known to be*** the best in the market.
(In a more formal, technical style)

They / It
- *is / are* — *said / known / assumed / accepted*
- *can be / must be* — *seen / demonstrated / proved / noticed*

to (be)

EXERCISES.

2) Now change the sentences in exercise 1 as in the example given above:

1.- Ferromagnetism is known to be a consequence ... .
2.- a=1 can be easily demonstrated to be correct.
3.- These statistics have been assumed to be correct.
4.- The temperature can be noticed to fall at night.
5.- Life after death can't be proved to exist.
6.- The image can be seen to be out ... .
7.- Energy is known not to be able to be destroyed.
8.- The Earth wasn't accepted to revolt around the Sun.
9.- Our method must be proved to be correct.
10.- The formula used must be demonstrated to be right.

3) Do the same with these sentences:

1.- We say that ice melts at 32 degrees Fahrenheit (32º F).
Ice is said to melt at 32º F

2.- We know that water boils at 212 º F or at 100º C.
That water is known to boil at ... .

3.- When something is hot, we assume that it has a high temperature.
When ..., It's assumed to have a high ... –

4.- We say that something has a low temperature when it is cold.
Somethin is said to have a low temp. –

5.- You can see that a thermometer with ~~a~~ 100 divisions is a Centigrade thermometer.
A thermometer with 100 divisions can be seen to be a Cent. –

6.- You know that a thermometer with 212 divisions is a Fahrenneit thermometer.
A thermometer with 212 divisions is known to be a Fahr. –

Air was beleived to consist of a single gas. However, later, air was discovered to consist of two — . Experiments were carried out to discover what .... . One of these experiments can be carried out quite simply.

First, a lighted candle was placed upright ... and it was covered with .... . The oxygen inside the bell-jar was used, and the — . The remaining couldn't be used for — . The name of nitrogen is given to.... . Oxygen is said to ..., a gas which isn't said to support — . Consequently, that nitrogen can't be said to support combustion.

Oxygen is required for respiration by animals and green plants, nitrogen is required for their development.

to support :

4) Compare these two ways of making a negative sentence:

e.g. a) It ***can be said that*** nitrogen ***does not support*** combustion.
b) Nitrogen ***cannot be said to support*** combustion.

Rewrite these sentences as in the example b):

1.- It can be said that a candle does not burn in nitrogen.
A candle can't be said to burn ---

2.- It can be said that the remaining gases do not support combustion.
The remaining gases can't be said to support combustion

3.- It can be seen that green plants and animals do not develop normally without sufficient nitrogen and oxygen.
Green plants and animals can't be seen to develop normally -- -

4.- At first, it was assumed that air did not consist of more than one gas.
At first, air wasn't assumed to consist more than one gas.

5) Rewrite these texts **in a more formal, technical style** using passive forms and the introductory "it" (where appropriate). The subjects of the passive sentences are italicised.

a)

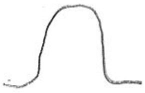
People believed that *air* consisted of a single gas. However, later, they discovered that *air* consists of two important gases and traces of others. They carried out *experiments* to discover what they might be. We can carry out *one of these experiments* quite simply:

First, they placed *a lighted candle* upright in water, and covered *it* with a bell-jar. The candle used *the oxygen inside the bell-jar*, and then it went out. The candle could not use *the remaining gas* for combustion. We give *the name of nitrogen* to this gas. We say that *oxygen* supports combustion, and we say that *a gas which cannot be used for burning* does not support combustion. Consequently, we cannot say that *nitrogen* supports combustion.

Animals and green plants require *oxygen* for respiration, and they require *nitrogen* for their development.

they might be: que poden ser

upright : verticalment cap amunt

bell-jar :  gerra en forma de campana

to go out : apagar-se

exercise 6 .

1 - c
2 - b
3 - a
4 - b
5 - c
6 - a
7 - c

8 - b
9 - a
10 - c
11 - b
12 - a
13 - c
14 - c
15 - b
16 - c

b) If a silver spoon is dipped into boiling water, the handle soon becomes hot, but if a wooden spoon is dipped into boiling water, the handle remains cool. This kind (type) of heat transfer is called conduction, and when heat travels in this way, it's said to be conducted. All metals are said to be good conductors of heat, and any materials enclosing air are said to be poor conductors. Poor conductors of heat are called insulators. The heat is prevented from escaping. Still air is known to be one the best insulators

insulators : aïllant

←

shining :
staggering :
windmills :
due :
to delay :
conceivably :

available :
tides :
attempts :
manner :
dense :
fuel :

Now do the same with this text:

b)

If we dip *a silver spoon* into boiling water, the handle soon becomes hot, but if we dip *a wooden spoon* into boiling water, the handle remains cool. We call *this kind of heat transfer* conduction, and when heat travels in this way, we say *it* is conducted. We say that *all metals* are good conductors of heat, and we say that *any materials enclosing air* are poor conductors. We call *poor conductors of heat* insulators. They prevent *the heat* from escaping. We know that *still air* is one of the best insulators.

6) Read the text and decide which alternative is correct.

ENERGY, HEAT & WORK.

Before the development of nuclear power plants, all the significant contributions to the mechanical energy (1) used *by man had the sun as their source. However, economical methods (2)__________ yet for converting directly solar radiation into work on a large scale. The amount of energy striking the earth from the sun is staggering when it (3)__________ as a whole, but the quantity of surface per unit is small. This introduces the serious difficulty of concentrating the heat (4)* gathered *from a large surface and using it as a source for conversion to work. Scientific research on this difficulty (5)__________, and progress (6)* has been made *on the related problem of the use of solar energy directly as heat; for example, now solar radiation (7)* is being used *to heat homes, to produce high temperatures for metallurgical operations (solar furnaces), and to concentrate aqueous solutions by evaporation.*

The kinetic energy (8) han been used *for a long time to some extent for the production of work, especially in rural areas (windmills), due to the mass movement of air. Variations in wind velocity, and the necessity for large-sized equipment to produce significant quantities of work are problems which (9)* have delayed *progress in this field.*

Conceivably, the available potential energy of tides (10)__________ and __________. Attempts in this direction on a large scale (11) have already been made *so far in parts of the world where tides are extreme. However, the total power production in this manner (12)__________ highly significant in comparison with world demands for energy.*

If some means could be devised to convert the energy in fuels into work without the intermediate generation of heat, then conversion efficiency (13)__________ *considerably. The usual device for the direct use of chemical energy is the electrolytic cell, in which the conversion is to electrical energy. Progress (14)______________________ in developing cells which operate on hydrogen and on carbonaceous fuels such as natural gas or coal. All these fuel cells (15)______________________ to supply modest power requirements for special purposes. The efficiency of these cells ranges from 65 to 80 per cent, about twice the value (16)* obtained *by the conventional process of first converting the chemical energy into heat.*

1.- a) are used [✓ b) was used] [✗ c) used]

2.- a) have not developed [✓✗ b) have not been developed]
c) can be developed

3.- [✓✗ a) is considered] b) was being considered
c) has considered

4.- a) has being gathered [✗ b) gathered]
[✓ c) could be gathered]

5.- a) has done b) did [✓✗ c) is being done]

6.- [✗ a) has been made] b) has made
[✓ c) must been made]

7.- [✓ a) is using] b) is used [✗ c) is being used]

8.- a) has used [✗ b) has been used] [✓ c) have been used]

9.- [✗ a) have delayed] [✓ b) could be delayed]
c) have been delayed

10.- a) could have concentrated and utilized
b) has concentrated and utilized
[✓✗ c) could be concentrated and utilized]

11.- [✓ a) were already made] [✗ b) have already been made]
c) had already been made

12.- [✓✗ a) is not supposed to be] b) is not supposed that
c) can be supposed that

13.- a) must be improved b) should been improved
[✓✗ c) could be improved]

14.- a) has made b) was been made [✓✗ c) has been made]

15.- a) are already been used [✓✗ b) are already being used]
c) were already been used

16.- [✓ a) is obtained] b) can be obtained [✗ c) obtained]

6) Write the description of the process of a mechanism. Try to keep in mind all you have learnt about the passive / active forms, and use the introductory "It" when possible.

NB A la negació s'utilitza el do doncs sempre va referida a una segona persona : tú

faulty : defectuos

use the advice : utilitza el consell

UNIT 7

INSTRUCTIONS

Instructions are defined as discourse that tells someone to do (or not to do) something.

For a better understanding of them, we will divide them into two groups:

a) *DIRECT INSTRUCTIONS* (with an imperative verb, sometimes combined with short time clauses).
b) *INDIRECT INSTRUCTIONS* (with passive modal verbs).

7.I DIRECT INSTRUCTIONS.

example: *Use* a high-resistance voltmeter. (Imperative)
* example: *Do not touch* the wires. (Negative imperative)

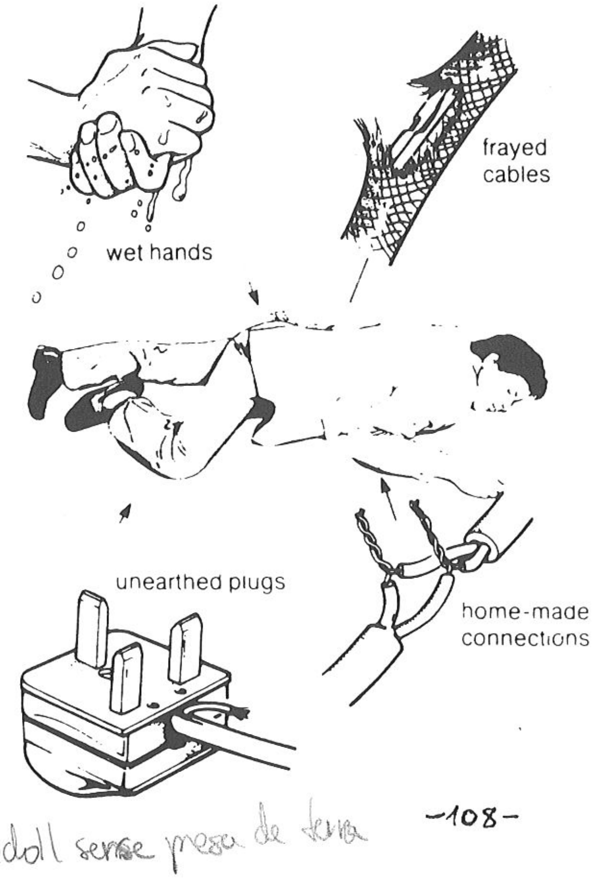
verb en infinitiu

*Short time clauses:

1) time clause + imperative:
After switching off the main supply, *remove the fuses*
Before removing the fuses, *switch off* the main supply

2) gerund + imperative:
Having switched off the main supply, *remove* the fuses.

Also notice the use of ADVERBS (never, always, etc) before some direct instructions.



DON'T use defective electrical equipment.

REPORT faulty electrical equipment immediately.

NEVER touch electrical equipment with wet hands.

REPORT all frayed cables.

DON'T make faulty electrical connections.

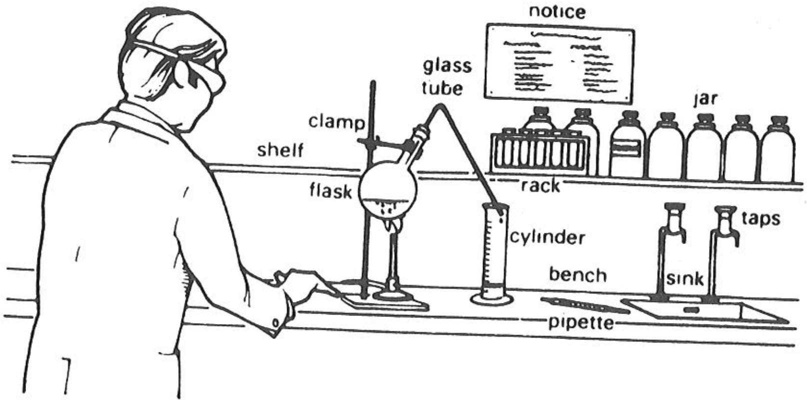
USE the advice of an authorised electrician.

CHECK the earthing on all power tools.

ELECTRICAL DANGER POINTS

endoll sense presa de terra

lab coat : bata
goggles : ulleres protectores
to lock : tancar amb clau
gas tap : xaute de gas
the bench : taula



Chemistry laboratory — safety precautions

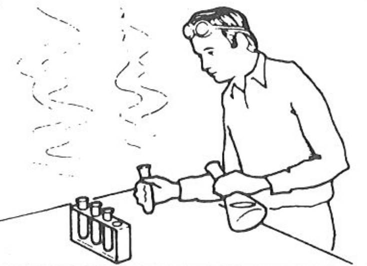
ALWAYS . . .

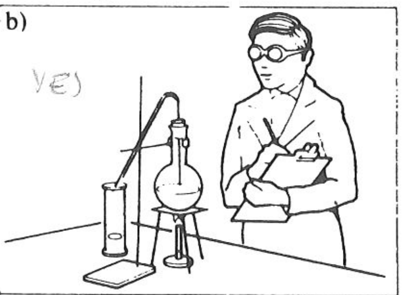
- . . . wear a lab coat
- . . . wear goggles
- . . . wash your apparatus before you leave
- . . . wash your hands before you leave
- . . . close all windows
- . . . lock the lab door

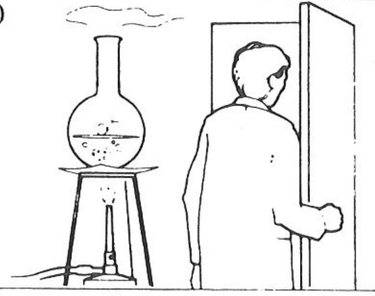
NEVER . . .

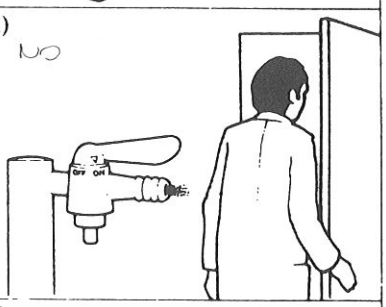
- . . . smoke in the lab
- . . . leave a gas tap on
- . . . leave your experiment in the middle
- . . . leave chemicals and apparatus on the bench
- . . . run in the lab

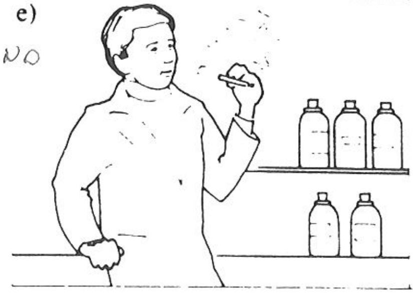
1) *Look at these pictures of scientists working in the same laboratory. Write down* YES *if you think he is following the safety precautions and* NO *if you think he is doing something wrong*

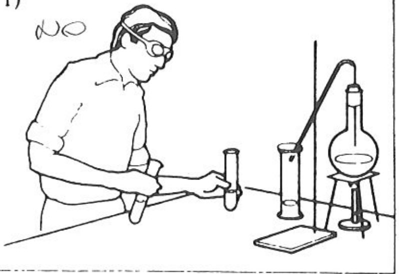
a)

NO

b)

YES

c)

NO

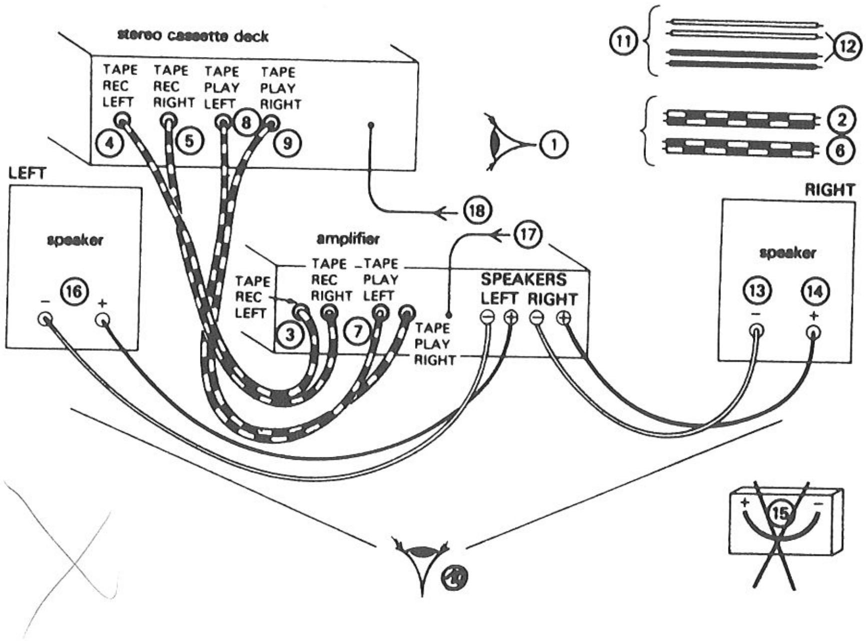
d)

NO

e)

NO

f)

NO

to switch : engegar
to plug : endollar
to push : premer

2) Now use the diagram below to give instructions. You must complete the sentences, using the verbs given.
If you see an X in the diagram, you must use a negative imperative.



2) Choose from the following verbs:

take, push, follow, connect, look, do, insert, find, plug, switch

Instructions for setting up a hi-fi system.

1. — — — — at the back of the cassette deck.
2. — — — — one pair of striped leads.
3. — — — — one end of a striped lead into TAPE REC LEFT on the amplifier.
4. — — — — the other end into TAPE REC LEFT on the tape deck.
5. — — — — the same with the other lead to connect TAPE REC RIGHT to TAPE REC RIGHT.
6. — — — — the other pair of striped leads.
7. — — — — one end of the striped lead into TAPE PLAY LEFT on the amplifier.
8. — — — — the other end into TAPE PLAY LEFT on the tape deck.
9. — — — — the same sequence with the other lead to connect TAPE PLAY RIGHT to TAPE PLAY RIGHT.
10. — — — — at the back of the loudspeakers.
11. — — — — the 4 loudspeaker leads.
12. — — — — one white and one black lead.
13. — — — — one end of the white lead to the negative socket on the right speaker channel and the other to the negative socket on the right amplifier channel.
14. — — — — the black lead to the positive channel on the right speaker and the positive socket on the right amplifier channel.
15. — — — — connect positive to negative.
16. — — — — the same with the left channel and the left speaker.
17. — — — — the amplifier into the mains electricity.
18. — — — — the cassette deck into the mains electricity.

wire - cables - leads = cable

allow :

3) Study these instructions for switching on and off an OSCILLOSCOPE:

1. Set the controls in the recmmended positions
2. Switch on.
3. Allow a few minutes to warm up
4. Advance the brightness control until the trace appears.
5. Centralize the trace with the X and Y shift controls.
6. Adjust the focus control for a clear, sharp trace.
7. Switch the ac input.
8. Connect the input leads.
9. Increase the Y gain control to obtain a convenient size of waveform.
10. Adjust the timebase controls to obtain a clear waveform.

Now link pairs of instructions using short time clauses.
For example: *Having switched one, allow a few minutes to warm up.*

3-4 ⇒ Having allowed a few minutes to warm up, advance ...

7-8 ⇒ Having switched the ac input, connect the input leads

7.II INDIRECT INSTRUCTIONS.

They are used in the **passive voice**, usually with modal verbs.

Example: (D.I.) Use a high-resistance voltmeter.
(I.I.) A high-resistance voltmeter ***should*** ***be used***.
must

Notice also the structure

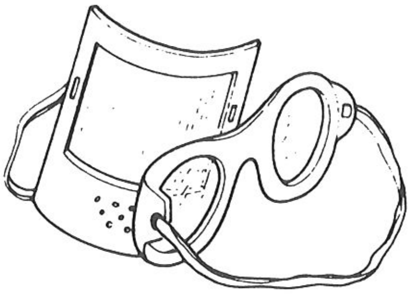
a l'hora de ... ⇔

WHEN	+	V-ING
IN	+	V-ING

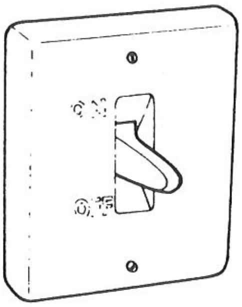
A pair of gloves shoud be used ***when dealing with*** dangerous substances.
in dealing with

helmets : asc
guards : protectors

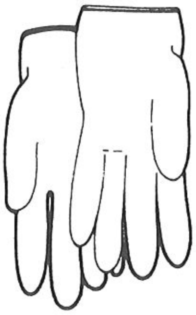
4) Complete the warnings with a) b) c) d) e):



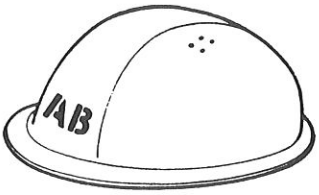
1 when operating a grinding wheel. ⇒mola



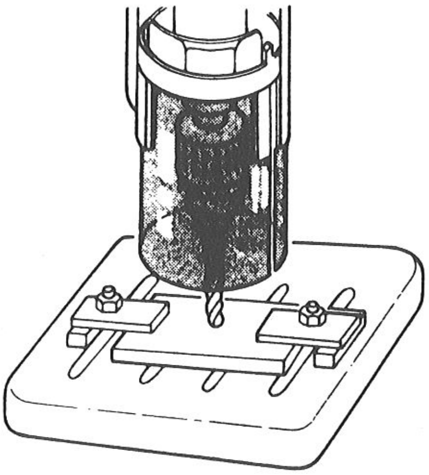
2 ... when working with electrical cables.



3 Rubber gloves must be worn .....



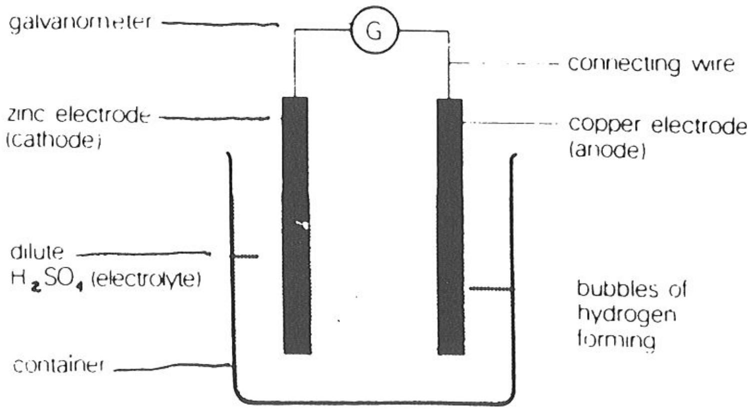
4 when working with overhead loads.



5 Guards must be positioned correctly .....

3 – a. when handling acidic substances.
1 – b. A mask or goggles must be worn
4 – c. Helmets must be worn
5 – d. when operating machines.
2 – e. The electricity supply must be switched off

5) Here is a list of instructions for setting up a simple voltaic cell. Use the diagram to help you complete the instructions in a direct form. Choose the verbs from the list.



plates : plaques

First, a container should be filled with dilute ....

Then, two electrodes should be arranged in the ...

Next, a galvanometer should be connected across ...

Afterwards, the reading indicated by the galvanometer deflection should be noted.

At this stage, wait for a short time.

Finally, the action of the acid and the copper should be observed.

26.5.95

note
wait
connect
fill
observe
arrange : col.locar

1. Fill.............. ...... a container with dilute sulphuric acid.
2. Arrange...............two electrodes in the electrolyte so that they are vertical and at a distance from each other.
3. Connect............. a galvanometer across the plates by means of two wires.
4. Note................... the reading indicated by the galvanometer deflection.
5. Wait.................... for a short time.
6. Observe............... the action of the acid and the copper.

Now rewrite these direct instructions into indirect ones in a paragraph, using sentence connectors. Use SHOULD.

First,

Finally,

7.III EXPRESSING METHOD.

Look at the following example to express **how things can be done:**

by means of : mitjançant

	method		*purpose*
How	*may* *can*	the radio	*be switched on?*

purpose	method	
The radio *may be switched on*	*by pressing* *by means of* *with*	the on/off switch.

Structure to express method:

BY	+	V-ING
BY MEANS OF	+	NOUN
WITH	+	NOUN

Small objects can be viewed by using microscope

to stretch : estirar

to lift : auxelair

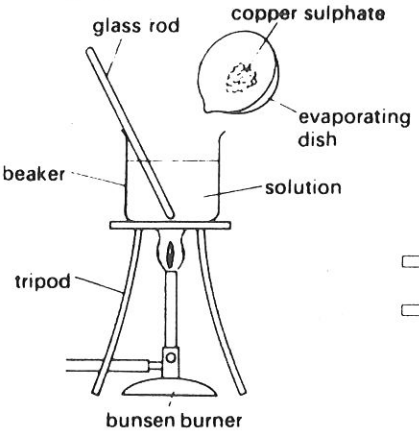
6) **Look at these instruments and tools and then make sentences describing what can be done with them:**

Example: Temperature $\left\{\begin{matrix}\textit{can}\\ \textit{may}\end{matrix}\right\}$ be measured $\left\{\begin{matrix}\textit{by means of}\\ \textit{by using}\\ \textit{with}\end{matrix}\right\}$ a thermometer.

purpose	*instrument or tool*	
for measuring temperature	a thermometer	
for viewing small objects	a microscope	
for viewing distant objects	a telescope	
for pouring liquids	a funnel	
for heating chemicals	a bunsen burner	
for weighing substances	a balance	
for hammering nails	a hammer	
for turning nuts & bolts	a spanner	
for turning screws	a screwdriver	
for measuring pressure	a barometer	
for lifting things	pulleys	
for testing acids and alkalis	litmus paper paper tornasol	

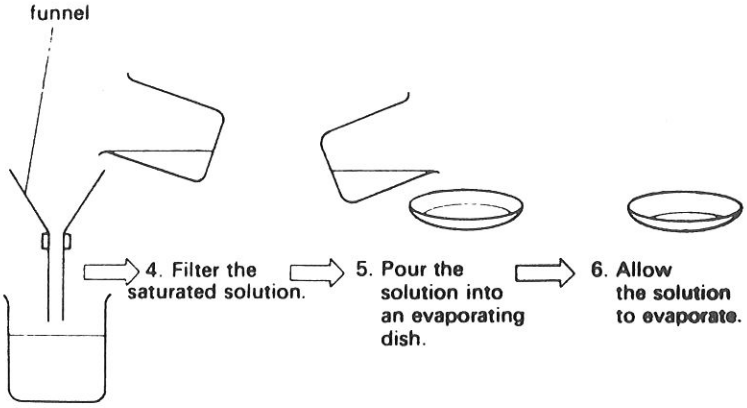
7) Look and read this process. Then complete the description of the experiment.

Making crystals:



Procedure:

1. Set up the apparatus as shown.
2. Heat the water.
3. Add the copper sulphate stirring it until the solution is saturated.



4. Filter the saturated solution.
5. Pour the solution into an evaporating dish.
6. Allow the solution to evaporate.

7. Observe the result: crystals appear.

Now complete this description of the experiment:

The *purpose* of the experiment is to make crystals
The *apparatus* consists of . . .
The *substance* to be crystallised is copper sulphate
The *method* of carrying out the experiment is by heat. the water
The *procedure* is as follows:
First, the apparatus is set up show.
Then, the water is heat.
Meanwhile, the copper sulphate added and stirred until . . . .
_____, the saturated solution _____.
Next, the solution . . . .
_____, the solution . . . .
Finally, the result is observed.
The *result* is that crystals appear.

so that : de manera que
in order : per a
the knob: pom de la porta

Press the on/off switch
- TO switch on the set
- SO AS TO
- IN ORDER TO
- SO THAT YOU .... (impersonal amb you)
- SO THAT THE SET is SWITCH ON (passive voice)

Fit an aerial
- TO obtain better reception
- SO AS TO
- IN ORDEN TO
- SO THAT YOU ....
- SO THAT better reception
  - is obtained
  - would be obtained

7.IV PURPOSE CLAUSES IN INSTRUCTIONS.

In this instruction, there is a structure that conveys purpose:

To turn the unit on, press the switch control ON.

As you have seen, the instruction begins with TO + INF

This is one of the possible structures you may find in imperatives. Others can be:

IMPERATIVE + TO + INFINITIVE (the same subject)

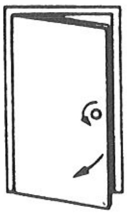
IMPERATIVE + IN ORDER TO / SO AS TO + INFINITIVE (same subject)

IMPERATIVE + SO THAT + CLAUSE (two diff. subjects usually)

examples: Wear gloves *to protect* your hands.
Wear gloves *in order to protect* your hands.
Wear gloves *so that* your hands do not get hurt.

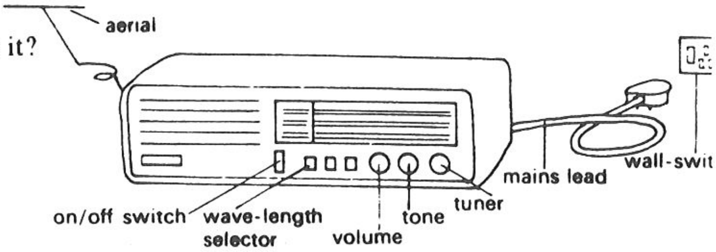
Action ***purpose***

1. Look and read:



purpose	*method*
To open the door,	*turn* the knob.
To open the door,	the knob $\left\{\begin{matrix}\textit{should}\\ \textit{must}\end{matrix}\right\}$ be turned.
method	*purpose*
Turn the knob $\left\{\begin{matrix}\text{so as}\\ \text{in order}\end{matrix}\right\}$	to open the door.

Now look at this radio. What must be done to operate it?



From the table below, make four sentences like each of the examples above.

purpose	*method*
switch on the set	press the on/off switch
adjust the volume	turn the volume knob
adjust the tone	turn the tone knob
select the right wave-length	press the wave-length selector
find the required radio station	turn the tuner
obtain better reception	fit an aerial
switch on the mains	press the wall-switch down
connect the radio with the mains	plug in the mains lead
operate the radio	

b. A gasoline engine was a carburettor so as to mix fuel
A carburettor is used | so as to ....
| to

c. Solar heaters are used so as to supply hot water

d. Electrical appliances are used by most consumers
so as to do all.

e. English is been studied by people around the world
so as to be able .

-Exercise 1. *Combine the two sentences into one by using the infinitive of purpose "**in order to**" or "**so as to**":*

a.Why are spark plugs used? (They ignite fuel).
Spark plugs are used in order to ignite fuel.

b.Why does the gasoline engine use a carburetor? (It mixes fuel with air)

c.Why do some homes and commercial buildings use solar heaters? (Solar heaters supply hot water).

d.Why do most consumers use electrical appliances? (These appliances do all types of work in the home).

e.Why are people around the world studying English? (They want to be able to read textbooks in English).

-Exercise 2. *Match the purpose expressions with the suitable instruction:*

✓ *1.To remove a tape.*
— *2.To neutralize static electricity*
3.To check a circuit
4.To use the device correctly
5.To store the display in an oscilloscope
6.To prevent the risk of short-circuiting

a.refer to its schematic
b.press the store pushbutton
— c.use the correct induction equipment
d.Do not remove the unit outer panel
✓ e.press the STOP / EJECT button
f.follow the instructions in the manual

Now transform the sentences into instructions followed by purpose expressions:
1.Press the STOP / EJECT button in order to remove a tape.
2. Use the correct .... so as to neutralize
3.
4.
5.
6.

-Exercise 3.*Complete the following purpose sentences using the information given*:

Example: The ice must not melt. Therefore, ~~therefore~~ the temperature is decreased.
Answer: The temperature is decreased ***so that*** the ice does not melt.

1.The demand for oil was not satisfied.Oil tankers were enlarged.
--*Oil tankers were enlarged so that* the demand for oil was satisfield

2.Expensive equipment was lost.This is the reason why the space shuttle was built.
--*The space shuttle was built so that* expensive equipment wasn't lost

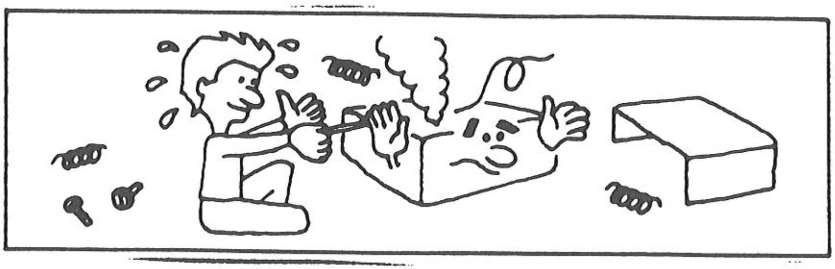
3.Traffic on local freeways is increasing; for this reason, a new bridge will be built.
--*A new bridge will be built so that* traffic on local freeways | isn't increased
| doesn't ''

4.The silicon chips in a computer must not overheat.For this reason, computers are usually cooled.
--*Computers must be cooled so that* the silicon chips don't overhead

5.The dam must not overflow.For this reason the water level in the reservoir will be reduced.
--*The water level in the reservoir will be reduced so that* the dam doesn't overflow

6.The steam valves had to be checked.Therefore,the nuclear-power plant was shut down.
--*The nuclear-power plant was shut down so that* the steam valves could be checked

-Exercise 5 *Translate into English the following instructions.*



1.Llegeix el manual d'instruccions cuidadosament.

2.Utilitza una sortida de corrent elèctrica ac estàndar.

3.No utilitzis una font d'energia dc.

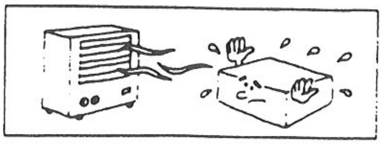
4.Comprova el voltatge.

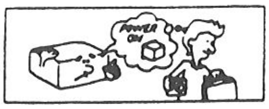
5.No danyis el cable.

6.Tria un lloc ben ventilat per instal.lar la unitat de manera que l'aparell no es re-calenti.

7.Evita la llum del sol directe.

8.No col.loquis mai l'aparell aprop d'una font de calor per tal de que l'aparell no es danyi.





9.Desendolla l'aparell si marxes.

10.No treballis amb les mans humides per tal de no rebre un shock elèctric.

Reading

10. Read this text and find answers to these questions:

a) What methods of separating materials are discussed?
b) What are: a solution?
a solvent?
a solute?
a filtrate?

Analysis and synthesis

Two of the main procedures carried out by chemists are analysis and synthesis. Analysis is finding out exactly what a substance consists of in terms of mixtures, compounds and elements. Synthesis is making complex materials from simpler ones. Such complex materials include plastics and 'synthetic' fibres.

In both analysis and synthesis it is often necessary to separate solids from liquids. Some solid substances seem to disappear when they are mixed with a liquid. They dissolve to form a solution, as when salt dissolves in water to form a salt solution. An insoluble substance can be separated from a soluble one by filtration. The insoluble substance remains on the filter while the liquid, or filtrate, passes through.

A dissolved substance, or solute, can be separated from the liquid in which it is dissolved by boiling away the solvent. This process is evaporation. Alternatively, the solvent can be separated by distillation. In this process the liquid is boiled so that it evaporates. The vapour is then cooled so that it condenses again.

Two or more liquids mixed together can separate by fractional distillation, provided that they boil at different temperatures. The liquid which boils at the lowest temperature is separated first, then the one with the next lowest boiling point, and so on. This process is used for separating petrol, paraffin and engine oil from crude oil in refineries.

11. Complete these notes:

Two . . . of chemists:
  1. . . . = finding what . . . consists of.
  2. . . . = making . . . from . . ., eg . . .
Both . . . and . . . involve separating . . . from . . .

Methods of separating:
  1. Aim: separating . . . from . . . in solution.
     Method: . . .
  2. Aim: separating . . . from . . .
     Method 1: . . . = . . .
     Method 2: . . . (Procedure: . . .)
  3. Aim: separating solutes with . . .
     Method: . . . (Procedure: . . .)

Setting up your new Computer

Welcome to your new QD Personal Computer. Look in the box and you will find all the parts to set up your system. But you will need to use your own TV. First take out your QD computer and look at the back, where you will find 4 sockets. The package also contains an aerial lead. You will need that now. Connect one end of the aerial lead to the TV socket and the other to your TV. If your TV has 2 aerial sockets – UHF and VHF – don't use the VHF one. Now the power supply unit, which is also provided in the package. At the back of the computer you will see a socket marked DC-in. Connect one end of the supply unit to this DC-in socket. Connect the other end to a mains electricity socket. Your computer is now on.

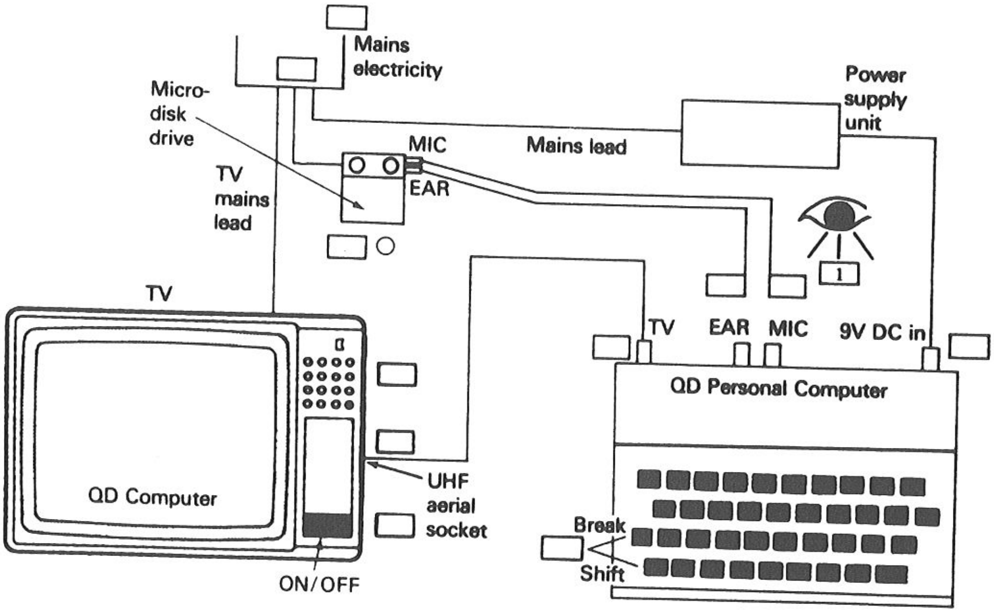
Now the micro-disk drive and the lead, which you will find in the package. The lead consists of 2 cables. Each cable has a plastic label – one with MIC (mike) and the other with EAR (ear). Connect the MIC cable to the MIC socket at the back of the computer, and the EAR cable to the EAR socket. Don't worry about which end you use – they are the same. The other ends of the leads go into the micro-drive – one to EAR on the micro-drive, and the other to MIC. Now plug the power unit into the electricity socket at the mains. OK, you're nearly ready.

Now tune in your TV. Firstly turn it on, but with the volume down. Now press a button to select a channel that you don't use for a TV channel. Now use the tuning mechanism to find the right position. When you see the message QD COMPUTER on your TV screen, it is correctly tuned in. Always use that channel with your computer, because it is always ready for action. Now your system is connected and ready for use.

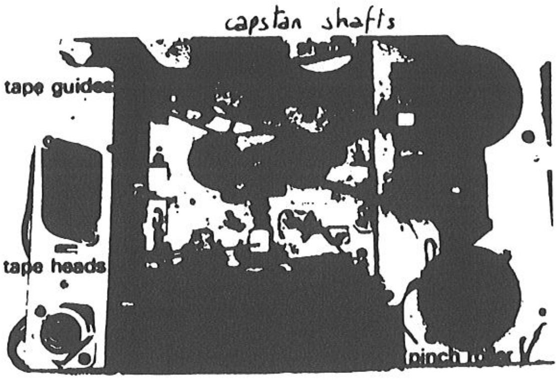
Finally take the 'Welcome' disk out of the package and insert it into the front of the disk-drive. Don't use force; and make sure the disk is the right way up. Just look at the arrows. Insert the disk and press the keys SHIFT and BREAK on the computer. The rest of the information is on the disk and it will appear on the screen.

If you have any problems with the equipment in the package, don't try to repair it yourself. Take it back to your supplier.

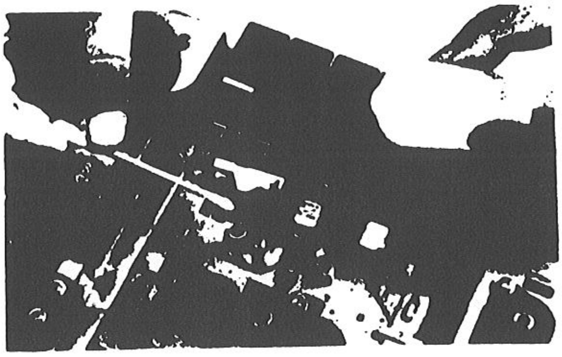
We wish you a lot of enjoyment with your new QD Personal Computer.



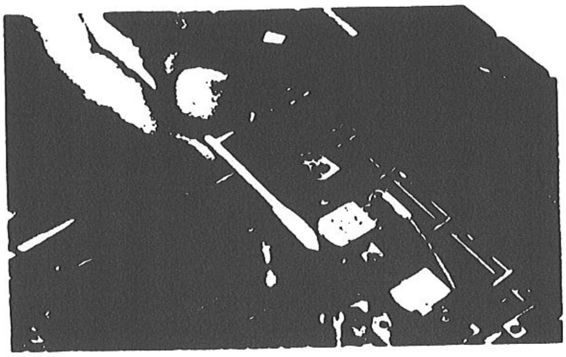
4. TAPE-DECK MAINTENANCE



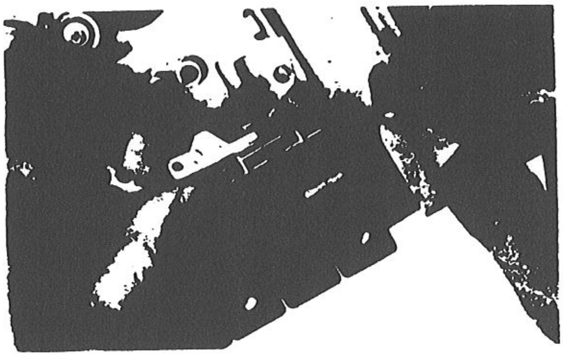
The inside of a tape-deck



Cleaning the pinch roller



Cleaning the tape-heads



Removing the pinch roller

An important procedure in tape-deck maintenance is to clean the heads carefully and frequently. The heads should always be cleaned before making recordings and at least once for every eight hours of use. A higher quality of recording and reproduction will be available if the proper cleaning procedure is followed. Dirty heads will cause a reduction in frequency-response, and irregular head wear. In extreme cases, the deck may fail to record at all.

Chlorothane and absolute anhydrous alcohol are commonly used cleaning fluids. Chlorothane is non-flammable and has excellent cleaning properties. Alcohol is harmless to the machine: it is combustible, however, and its cleaning properties are not completely satisfactory.

To clean the heads, first remove the head cover. Using a stiff cotton swab or a piece of gauze dipped in cleaning fluid, rub the entire head surface. Take care not to scratch it. Repeat the procedure on each head, until all the discolouration and tape oxides have been removed. Clean all metal parts over which the tape passes, such as the capstan shafts, tape guides and tape lifters. A satisfactory job cannot be done with the thin, flexible shafts often provided by shops; therefore use a swab with a rigid shaft.

After a lot of use the pinch-roller will also accumulate a film of oxide. To remove the pinch-roller for cleaning, grasp it with the fingers and pull it forward. Only fluids suitable for cleaning rubber surfaces should be used on the pinch-roller. Do not use chlorothane as it will cause deterioration of the rubber.

2 Comprehension

A. List the parts of the tape-deck over which the tape passes.

B. Choose the correct answer a, b, c, or d, to each of the following questions:

(i) According to the passage, in what way is alcohol superior to chlorothane for cleaning purposes?

- a. It is non-flammable.
- b. It is combustible.
- c. It has excellent cleaning properties.
- d. It can be used to clean rubber surfaces.

(ii) According to the passage, which of the following parts of a tape-deck is made of rubber?

- a. the tape heads
- b. the pinch roller
- c. the capstan shafts
- d. the tape lifters

(iii) According to the passage, which of the following would you *not* use to clean a tape head?

- a. a cotton swab with a rigid shaft
- b. a piece of gauze
- c. chlorothane
- d. a piece of glass paper

(iv) According to the passage, what is the main purpose of cleaning tape heads?

a. to reduce friction
b. to remove oxides and discolouration
c. to increase tape speed
d. to reduce frequency-response

C. Explain what the following refer to:

(i) 'its' in line 17.
(ii) 'it' in line 23.

3 Language Practice

A. Study this example:

an important procedure / improve engine performance / adjust the carburettor

An important procedure in improving engine performance is to adjust the carburettor.

Change the following groups of phrases into sentences in the same way:

(i) the most important procedure / install electrical equipment / double-check all connections
(ii) the next step / prepare the solution / weigh and mix the chemicals
(iii) one of the stages / clean the surface / remove all discolouration
(iv) the final stage / connect the equipment / verify the voltage
(v) an important procedure / maintain tape-deck / clean the heads

C. Study this sentence:

The heads should always be cleaned before making recordings.

Using the correct form of the words, change each of the following groups of words into a sentence in the style of the sentence above:

(i) estimate / always / checked / pay / bill
(ii) walls / never / painted / apply / undercoating
(iii) approval / always / given / changing / specifications
(iv) the head cover / always / removed / clean / heads

Paraules que per si mateixes no tenen significat, però que si el tenen d'una cosa que ja s'ha dit anteriorment.

such : tals

the former : el primer

the latter : el segon, d'últim

witch : pot fer referencia a la paraula o
a tota la frase

UNIT 8

ANALYSIS OF THE TEXT

In this last unit you will see **different texts with some of the structures you have studied in this course**. In order to get a better understanding of those texts, you will be provided with some ***transitional markers*** to link ideas together so that text can be easier to read and understand.

8.I **TRANSITIONAL MARKERS.** (anafores)

You can have different kinds of transitional markers that **refer back to another word** or words, mentioned earlier in the sentence or paragraph and **avoid innecessary repetition** in the text. They serve as synonyms or substitutes.

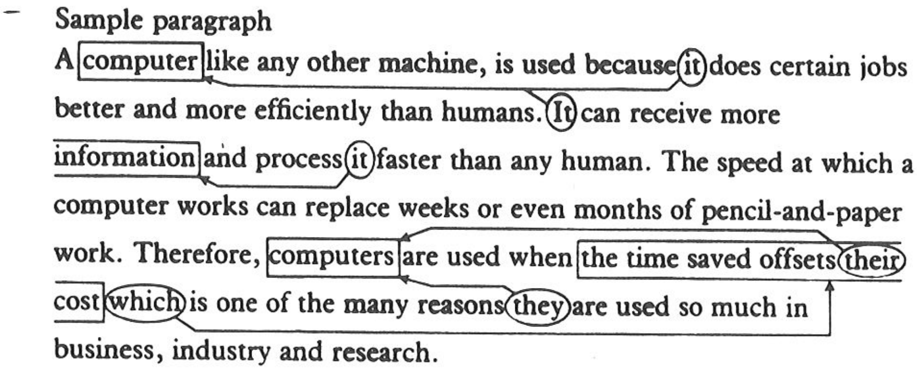
PERSONAL *PRONOUNS:* IT, THEY, I, HE, SHE, WE...

RELATIVE PRONOUNS: WHICH, WHO, WHOSE, THAT..

DEMONSTRATIVE ADJECTIVES: THIS, THAT, THESE, THOSE

OTHER: SUCH, ONE, THE FORMER, THE LATTER, THE FIRST, THE SECOND, THE LAST...

Look at this example:



- Sample paragraph

A computer like any other machine, is used because it does certain jobs better and more efficiently than humans. It can receive more information and process it faster than any human. The speed at which a computer works can replace weeks or even months of pencil-and-paper work. Therefore, computers are used when the time saved offsets their cost which is one of the many reasons they are used so much in business, industry and research.

1) Using the sample paragraph as a model, join the circled word with the word or words it refers back to.

Computers are electronic machines that process information. They are capable of communicating with the user, of doing different kinds of arithmetic operations and of making three kinds of decisions. However, they are incapable of thinking. They accept data and instructions as input, and after processing it they output the results.

When talking about computers, both hardware and software need to be considered. The former refers to the actual machinery, whereas the latter refers to the programs which control and coordinate the activities of the hardware while processing the data.

The first computer was built in 1930 but since then computer technology has evolved a great deal. There are three different kinds of computers in use today: the mainframe, the minicomputer and the microcomputer. These all have one thing in common: they operate quickly and accurately in solving problems.

2) Read the text and answer al the questions below.

What is a computer?

[1] A computer is a machine with an intricate network of electronic **circuits** that operate **switches** or magnetize tiny metal **cores.** The switches, like the cores, are capable of being in one of two possible states, that is, on or off; magnetized or demagnetized. The machine is capable of storing and manipulating numbers, letters, and characters. The basic idea of a computer is that we can make the machine do what we want by inputting signals that turn certain switches on and turn others off, or that magnetize or do not magnetize the cores.

[2] The basic job of computers is the processing of information. For this reason, computers can be defined as **devices** which accept information in the form of instructions called a **program** and characters called **data,** perform mathematical and/or logical operations on the information, and then supply results of these operations. The program, or part of it, which tells the computers what to do and the data, which provide the information needed to solve the problem, are kept inside the computer in a place called **memory.**

[3] Computers are thought to have many remarkable powers. However, most computers, whether large or small have three basic capabilities. First, computers have circuits for performing arithmetic operations, such as: addition, subtraction, division, multiplication and exponentiation. Second, computers have a means of communicating with the user. After all, if we couldn't feed information in and get results back, these machines wouldn't be of much use. However, certain computers (commonly minicomputers and microcomputers) are used to control directly things such as robots, aircraft navigation systems, medical instruments, etc.

[4] Some of the most common methods of inputting information are to use **punched cards, magnetic tape, disks,** and **terminals.** The computer's **input device** (which might be a **card reader,** a **tape drive** or **disk drive,** depending on the **medium** used in inputting information) reads the information into the computer.
For outputting information, two common devices used are a printer which prints the new information on paper, or a **CRT display screen** which shows the results on a TV-like screen.

[5] Third, computers have circuits which can make decisions. The kinds of decisions which computer circuits can make are not of the type: 'Who would win a war between two countries?' or 'Who is the richest person in the world?' Unfortunately, the computer can only decide three things, namely: Is one number less than another? Are two numbers equal? and, Is one number greater than another?

[6] A computer can solve a series of problems and make hundreds, even thousands, of logical decisions without becoming tired or bored. It can find the solution to a problem in a fraction of the time it takes a human being to do the job. A computer can replace people in dull, routine tasks, but it has no originality; it works according to the **instructions** given to it and cannot exercise any value judgments. There are times when a computer seems to operate like a mechanical 'brain', but its achievements are limited by the minds of human beings. A computer cannot do anything unless a person tells it what to do and gives it the appropriate information; but because electric pulses can move at the speed of light, a computer can carry out vast numbers of arithmetic-logical operations almost instantaneously. A person can do everything a computer can do, but in many cases that person would be dead long before the job was finished.

Find out what these words in italics refer to:

1. **that** operate switches (*l. 2*) *electronic circuits*
2. **which** accept information (*l. 10*) ....
3. or part of **it** (*l. 13*) ....
4. **which** tells the computers (*l. 14*) ....
5. **which** prints the new information (*l. 33*) ....
6. **which** shows the results (*l. 34*) ....
7. **which** can make decisions (*l. 35*) ....
8. **It** can find the solution (*l. 42*) ....
9. **it** has no originality (*l. 45*) ....
10. tells **it** what to do (*l. 49*) ....

1 Main idea

Which statement best expresses the main idea of the text? Why did you eliminate the other choices?

☐ 1. Computers have changed the way in which many kinds of jobs are done.

☐ 2. Instructions and data must be given to the computer to act on.

☐ 3. Computers are machines capable of processing and outputting data.

☐ 4. Without computers, many tasks would take much longer to do.

2 Understanding the passage

Decide whether the following statements are true or false (T/F) by referring to the information in the text. Then make the necessary changes so that the false statements become true.

T F

☐ ☐ 1. A computer can store or handle any data even if it hasn't received information to do so.

☐ ☐ 2. All computers accept and process information in the form of instructions and characters.

☐ ☐ 3. The information necessary for solving problems is found in the memory of the computer.

☐ ☐ 4. Not all computers can perform arithmetic operations, make decisions, and communicate in some way with the user.

☐ ☐ 5. Computers can still be useful machines even if they can't communicate with the user.

☐ ☐ 6. There are many different devices used for feeding information into a computer.

☐ ☐ 7. There aren't as many different types of devices used for giving results as there are for accepting information.

☐ ☐ 8. Computers can make any type of decision they are asked to.

☐ ☐ 9. Computers can work endlessly without having to stop to rest unless there is a breakdown.

to intall } the same
to set up }

3 Understanding words

Refer back to the text and find synonyms (i.e. words with a similar meaning) for the following words.

1. complex	(*l. 1*)	*intricate*
2. fundamental	(*l. 9*)	
3. a way	(*l. 21*)	
4. uninterested	(*l. 42*)	
5. accomplishments	(*l. 48*)	

Now refer back to the text and find antonyms (i.e. words with an opposite meaning) for the following words.

6. large	(*l. 2*)	*tiny*
7. receiving	(*l. 7*)	
8. reject	(*l. 10*)	
9. unusual	(*l. 27*)	
10. small	(*l. 51*)	

V.- Read the following text carefully and answer these questions.

ELECTRONICS.

Electronics is an extension of electricity. It is the study and application of the phenomena of electrons and electro-magnetic waves. In electronics, use is made of complex electrical circuits employing transistors in addition to more elementary components.

All these electronic circuits can range from very simple ones which 69) ***perform*** elementary 'on-off' functions like a switch, to those which are so complex that they 70)______________ only by specialist engineers. Users of such equipment have to rely more on the fact that it works than on understanding how it works. If anything goes wrong with it, 72) ***they*** have to send for an expert to put it right. Computers, for example, are usually serviced by a team of experts. 73)__________________ the continuous checking, these machines may develop a fault or simply break down.

Even so, a home-computer industry is expanding rapidly. Cheap micro-circuits are bringing computing power to thousands of homes in America. These computer kits are not much bigger than a stereo receiver. The microprocessor is the beginning of a system. 74) ***It*** miniaturises the central processing unit of the computer. A memory 75)__________________ to hold the computer programme. The larger the memory of the computer, the more you can do with it. 77) ***However***, the basic unit of memory is the 'byte', which usually consists of eight 'bits'. Each 'bit' is a 0 or a 1, the binary language of the computer.

Other uses of electronics 78)__________________ in specialised fields such as radio, telecommunications, audio and video reproduction systems and control equipment, and there are many other uses. 79)__________________ the circuits are very complex in many cases, they are really combinations or extensions of basic circuits. The brain of an electronic circuit was originally the radio valve or 'tube', as it is sometimes known. Nowadays, although valves are still in use, the transistor 80)__________________ their place.

68.- According to the passage, which of the following could be a component of an electronic circuit? (1st paragraph).

a) a function   [✓ c)] a transistor
b) a computer   d) a reproduction system

69.- Which of the following has a synonym in "perform"? (line 7).

a) take   c) switch
[✓ b)] carry out   d) act

70.- a) can understand   [✓ c)] can be understood
b) could understood   d) could to be understood

71.- According to the passage, why do many users of electronic equipment not understand how it works? (2nd paragraph)

a) they are specialised engineers
b) it performs only simple functions
[✓ c)] it is extremely complex
d) it combines various basic circuits

72.- "they" in line 11 refers to:

[✓ a)] users   c) computers
b) specialist engineers   d) experts

73.- a) Although   c) Even though
b) While   [✓ d)] In spite of ⇔ despite

74.- "It" in line 19 refers to:

a) the system   c) the computer programme
[✓ b)] the microprocessor   d) the stereo receiver

75.- a) also need   c) also needed
b) can been needed   [✓ d)] is also needed

76.- According to the passage, which of the following holds the computer programme? (3rd paragraph).

a) the micro-circuit   c) the microprocessor
b) the byte   [✓ d)] the memory

77.- "However" in line 22 has a synonym in:

[✓ a)] Nevertheless   c) Even though
b) While   d) Despite

78.- a) find   [✓ c)] are found
b) found   d) have being found

79.- a) While   c) In spite of
[✓ b)] Although   d) Whereas

80.- [✓ a)] has gradually taken
b) has gradually took
c) had gradually taken
d) have gradually been taken

50 - c
51 - d
52 - b
53 - a
54 - b
55 - c
56 - d
57 - c
58 - b
59 - a
60 - c
61 - b

II. **Read the following text carefully and answer these questions:**

ELECTROMAGNETIC RADIATION.

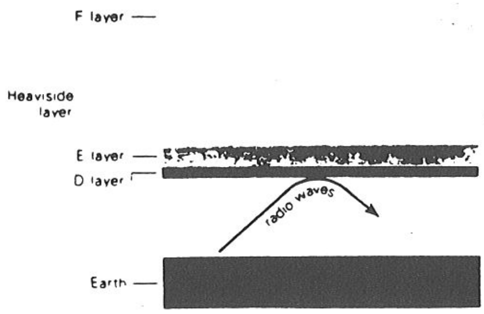
The complete range of electromagnetic radiation is made up of gamma rays, X-rays, ultra-violet rays, ordinary visible light, infra-red (heat) radiation, and radio waves. All these 50) **are** given out by the sun, but some of them do not reach us because the atmosphere behaves like a filter. It lets through visible light and certain radio waves, 51)____________ **most** of the other radiation is absorbed. This is fortunate for us, because gamma rays, X-rays and ultra-violet rays can harm living things.

A well-known characteristic of light is that it travels in straight lines. The other electromagnetic radiations behave in a similar way. For this reason many scientists thought that Marconi was wasting his time when he tried to send radio waves from Cornwall (south-west of England) to Newfoundland in 1902. It seemed obvious that the curvature of the Earth across the Atlantic would make the experiment fail. 53) **Nevertheless**, the experiment was successful, and once again it 54)_______________ that experiments should always be made to check predictions from theory.

A new theory was soon developed to explain the new facts; 55) **this** was that a layer existed in the upper atmosphere which could reflect radio waves. In this way 56) **they** would be bounced round the world. Later work showed that there were several layers at different heights, they are now referred to by letters, and the general region in which they are present is called the ionosphere. The layers can conduct electricity because the particles (atoms and molecules) of the atmospheric gases are ionized, that is, they are split into ions and electrons.

An atom of any substance consists of a posively-charged central body (the nucleus) surrounded by negatively-charged electrons, like planets around the sun. Each electron carries a single negative charge; and usually the nucleus carries a number of positive charges equal to the number of electrons. Therefore the whole atom is 58)_____________ positive __________negative.

Electric currents flowing in wires are streams of electrons running 59)________________ the wire. Ions can also act as a current of electricity in liquids or gases, so the presence of electrons and ions in the upper atmosphere 60) **makes** it electrically conducting. In fact, if there is a wind in the ionosphere, it will be an electric current.



50.- **"are given out"** on lines 3-4 has a synonym in:

a) are received
b) are transformed
[✓ c) are emitted]
d) are obtained

51.- a) in spite of
b) despite
[✓ c) however]
[✓ d) whereas]

52.- One of these statements is ***FALSE*** according to the second paragraph in the text. Which one?

[✓ a) Many scientists thought that the curvature of the Earth wouldn't make Marconi's experiment successful.]

[✓ b) Many scientists thought that the experiment Marconi was carrying out would be successful because light travels in straight lines.]

c) Electromagnetic radiations behave like light, that is, they can also travel in straight lines.

d) Predictions from theory should always be checked with experiments.

53.- **"Nevertheless"** on line 15 could be substituted by:

[✓ a) However]
b) Even though
c) While
[✓ d) Although]

54.- [✓ a) was been shown]
[✓ b) had been shown]
c) has show
d) is being showed

55.- **"this"** on line 19 refers to:

a) facts
b) a layer
[✓ c) new theory]
d) radio wave

56.- **"they"** on line 20 refers to:

a) facts
b) layers
c) new theories
[✓ d) radio waves]

57.- According to the third paragraph, what is the explanation for the fact that Marconi could send radio waves from Cornwall to Newfoundland in 1902?

a) He developed a new theory.

b) He invented a mechanism to make radio waves bounce round the world.

[✓ c) Radio waves can be reflected by the layer that exists in the upper atmosphere.]

d) He constructed a layer that could reflect radio waves from one part of the world to another.

58.- a) both / or
[✓ b) neither / nor]
[✓ c) either / and]
d) neither / or

59.- [✓ a) through]
b) across
c) onto
d) round

60.- **"makes it electrically conducting"** means in the text:

a) is what causes electricity in the ionosphere.

b) makes it possible to conduct electricity electronically.

[✓ c)] makes of the upper atmosphere a good conductor of electricity.

d) produces a current of electricity in the layers.

61.- Where could you find this kind of text?

a) in a catalogue

[✓ b)] in a textbook

c) in a manual of instructions

[✓ d)] in a specialised magazine on Electronics.